



A Division of Systems, LLC

VSH Series

Dock Leveler

Owner's/User's Manual



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Manual No. 4111-0024
Mar. 2021

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PRECAUTIONS

Recognize Precautionary Information

Safety-Alert Symbol



The Safety-Alert Symbol is a graphic representation intended to convey a safety message without the use of words. When you see this symbol, be alert to the possibility of death or serious injury. Follow the instructions in the safety message panel.

DANGER

The use of the word DANGER signifies the presence of an extreme hazard or unsafe practice which will most likely result in death or severe injury.

WARNING

The use of the word WARNING signifies the presence of a serious hazard or unsafe practice which could result in death or serious injury.

CAUTION

The use of the word CAUTION signifies possible hazard or unsafe practice which could result in minor or moderate injury.

NOTICE

The use of the word NOTICE indicates information considered important, but not hazard-related, to prevent machine or property damage.

SAFETY INSTRUCTIONS

Indicates a type of safety sign, or separate panel on a safety sign, where safety-related instructions or procedures are described.

General Operational Precautions



Read and understand the Owner's/User's Manual and become thoroughly familiar with the equipment and its controls before operating the equipment.

Never operate equipment while a safety device or guard is removed or disconnected.

Never remove DANGER, WARNING, or CAUTION signs, Placards or Decals on the equipment unless replacing them.

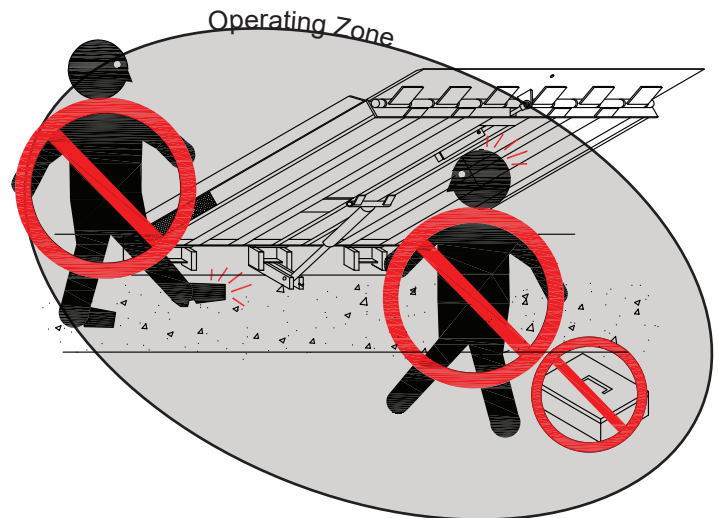


Figure 1

Do not start the equipment until all unauthorized personnel in the area have been warned and have moved outside the operating zone (Figure 1).

Remove any tools or foreign objects from the operating zone before starting.

Keep the operating zone free of obstacles that could cause a person to trip or fall.



WARNING: This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

PRECAUTIONS

Operational Precautions



Learn the safe way to operate this equipment. Read and understand the manufacturer's instructions. If you have any questions, ask your supervisor.

DANGER



Stay clear of dock leveling device when transport vehicle is entering or leaving area.



Do not move or use the dock leveling device if anyone is under or in front of it.



Keep hands and feet clear of pinch points. Avoid putting any part of your body near moving parts.

WARNING



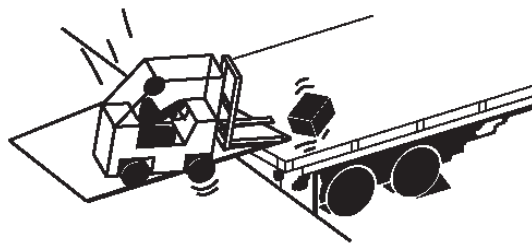
Chock/restrain all transport vehicles. Never remove the wheel chocks or release the restraining device until loading or unloading is finished, and transport driver has been given permission to drive away.



Do not use a broken or damaged dock leveling device or restraining device. Make sure proper service and maintenance procedures have been performed before using.



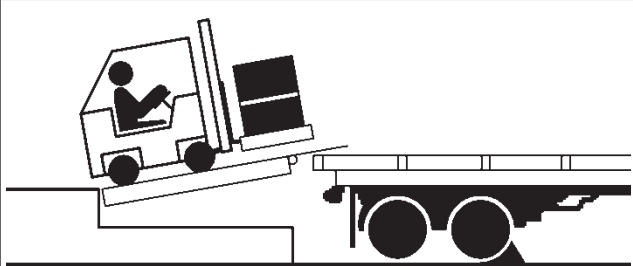
Make sure lip overlaps onto transport vehicle bed at least 4 in. (102 mm).



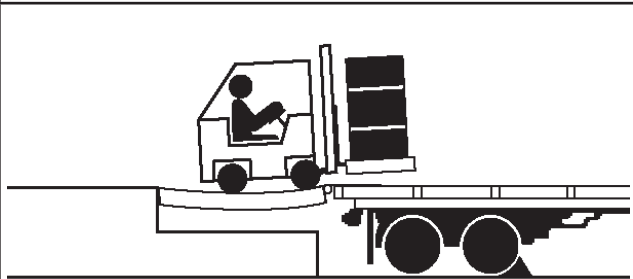
Keep a safe distance from both side edges.

Operational Precautions

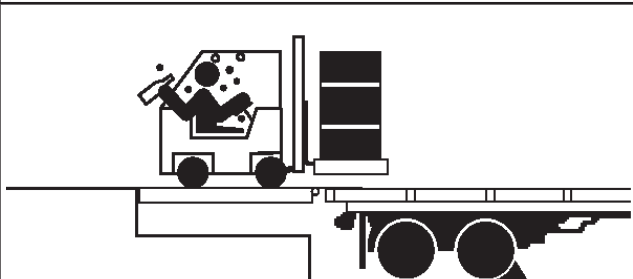
! WARNING



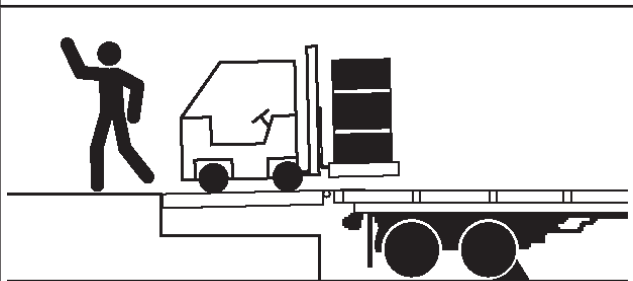
Do not use dock leveling device if transport vehicle is too high or too low.



Do not overload the dock leveling device.



Do not operate any equipment while under the influence of alcohol or drugs.



Do not leave equipment or material unattended on dock leveling device.

PRECAUTIONS

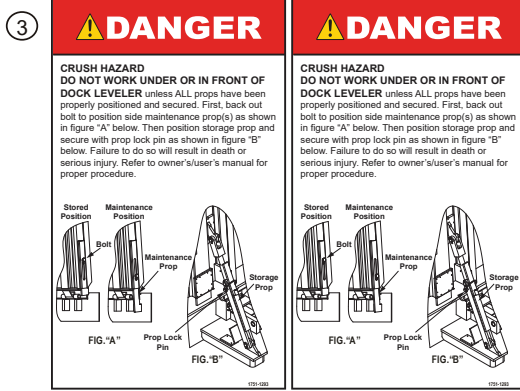
Safety Decals



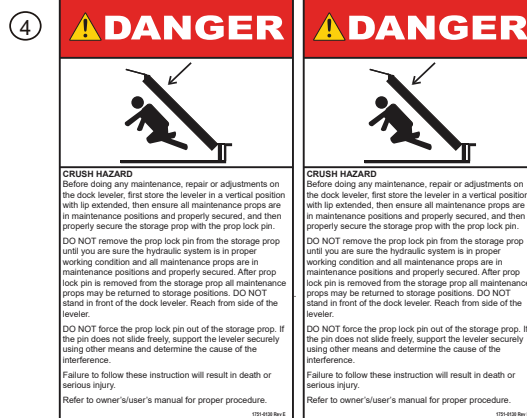
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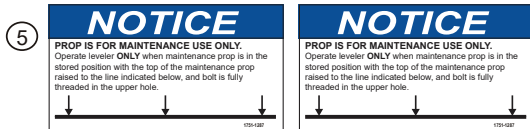
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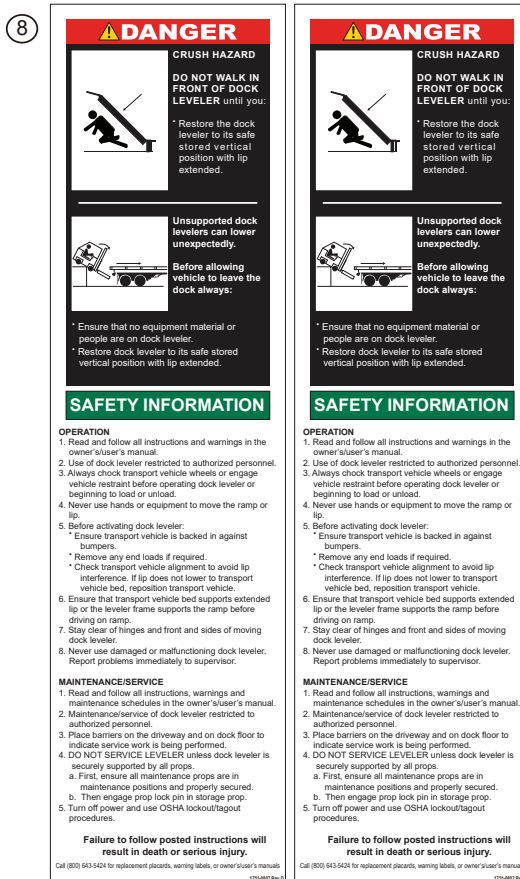
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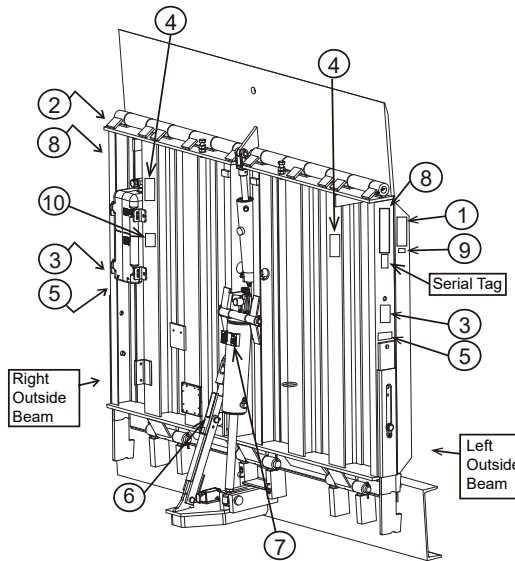
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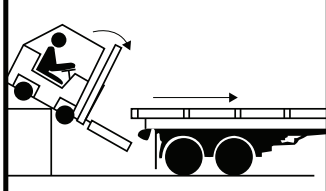
Decal 3 will have two positions, one on the left outside beam as shown and one on the right outside beam in the same position. Decal 8 will have two positions, one on the left outside beam as shown and one on the right outside beam in the same position. Decal 5 will have two positions, one on the left outside beam as shown and one on the right outside beam in the same position. Decal 2 will be positioned on the upper most corner of the right outside beam (mirror position of decal 1).

Placard



DANGER


OPERATING INSTRUCTIONS




- Read and follow all instructions, warnings, and maintenance schedules in the manual and on placards.
- Operation and servicing of dock leveler is restricted to authorized personnel.

- Always chock transport vehicle wheels or engage vehicle restraint and set parking brakes before operating dock leveler or beginning to load or unload.
- Before activating dock leveler, check to make sure the transport vehicle is positioned squarely against dock bumpers. Ensure lip will avoid contact with transport vehicle frame, sides and cargo during dock leveler activation. If contact is likely or observed, reposition transport vehicle.
- Ensure the transport vehicle floor supports extended lip or the leveler frame (lip keepers or below dock endload supports) supports the ramp before driving on ramp.
- Stay clear of hinges and front and sides of moving dock leveler.
- Never use hands or equipment to move the ramp or lip.
- Never use damaged or malfunctioning dock leveler. Report problems immediately to supervisor.
- Always store dock leveler and remove people, material, and equipment from ramp before vehicle leaves the dock.
- DO NOT ENTER PIT unless dock leveler is securely supported and proper lockout/tagout procedures have been completed. See "Maintenance Precautions" in Owner's/User's Manual.

FAILURE TO FOLLOW THESE INSTRUCTIONS WILL RESULT IN DEATH OR OTHER SERIOUS INJURY.



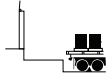
Scan to view our owner's/user's manuals online.
www.LoadingDockSystems.com
1.800.643.5424
 Call for additional placards, or manuals, or with questions regarding proper use, maintenance, and repair of dock leveler.



⚠ WARNING: CANCER AND REPRODUCTIVE HARM
www.P65Warnings.ca.gov

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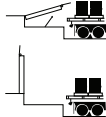
VERTICAL STORING DOCK LEVELERS



NORMAL OPERATION

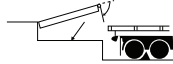
1. To lower the vertical storing dock leveler, Press and hold the LOWER button until lip is resting on the transport vehicle.

NOTE: Before lowering, the leveler will raise slightly enabling the release of the automatic storage prop.



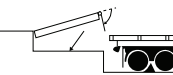
STORING LEVELER

1. To store the vertical storing dock leveler, Press and hold the RAISE button until the dock leveler is completely stored. The motor will shut off automatically when the leveler is stored. When properly stored a blue indicator light will illuminate.



LIP OPERATION

1. To fold the lip the leveler must be in the lower mode. With the LOWER button pressed simultaneously press the LIP button. With both buttons pressed, the lip will fold.
2. To extend the lip the leveler must be in the raise mode. With the RAISE button pressed simultaneously Press the LIP button. With both buttons pressed the lip will extend.



BELOW DOCK ENDLADING

1. To position the dock leveler for below dock endloading from the stored position, press and hold the LOWER button. Before the leveler reaches the fully lowered position, simultaneously press the LIP button to fold the lip completely. Once the lip is completely folded (pendant) the LIP button can be released. Continue pressing the LOWER button until the leveler reaches the full below dock service position. Endloads can now be removed from or placed on the transport vehicle.
2. Once endloads have been removed the leveler can be placed into the transport vehicle by pressing the RAISE button. Once the leveler and lip have proper clearance from the transport vehicle, the lip can be extended by simultaneously pressing the LIP button and the RAISE button. With the lip fully extended, both buttons can be released. The leveler can now be lowered or stored.

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OWNER'S/USER'S RESPONSIBILITIES

- 1) The manufacturer shall provide to the initial purchaser and make the following information readily available to the owners/users and their agents, all necessary information regarding Safety Information, Operation, Installation and Safety Precautions, Recommended Initial and Periodic Inspections Procedures, Planned Maintenance Schedule, Product Specifications, Troubleshooting Guide, Parts Break Down, Warranty Information, and Manufacturers Contact Information, as well as tables to identify the grade(slope) for all variations of length or configuration of the dock leveling device and information identifying the maximum uncontrolled drop encountered when sudden removal of support while in the working range of the equipment.
- 2) When selecting loading dock safety equipment, it is important to consider not only present requirements but also future plans and any possible adverse conditions, environmental factors or usage. The owners/users shall provide application information to the manufacturer to receive recommendations on appropriate equipment specifications and capacity.
- 3) The owner/user must see all nameplates, placards, decals, instructions and posted warnings are in place and legible and shall not be obscured from the view of the operator or maintenance personnel for whom such warnings are intended for. Contact manufacturer for any replacements.
- 4) Dock leveling devices may become hazardous if the manufacturer's instructions regarding modifications or adjustments are not followed. Modifications or alterations of dock leveling devices shall only be made with prior written approval from the original manufacturer. These changes shall be in conformance with all applicable provisions of the MH30.1 standard and shall also satisfy all safety recommendations of the original equipment manufacturer of the particular application.
- 5) The owner/user should recognize the inherent dangers of the interface between the loading dock and the transport vehicle. The owner/ user should, therefore, train and instruct all operators in the safe operation and use of the loading dock equipment in accordance with manufacturer's recommendations and industry standards. Effective operator training should also focus on the owner's/user's company policies, operating conditions and the manufacturer's specific instructions provided with the dock leveling device. Maintaining, updating and retraining all operators on safe working habits and operation of the equipment, regardless of previous experience, should be done on a regular basis and should include an understanding and familiarity with all functions of the equipment. Owners/users shall actively maintain, update and retrain all operators on safe working habits and operations of the equipment.
- 6) An operator training program should consist of, but not necessarily be limited to, the following:
 - a) Select the operator carefully. Consider the physical qualifications, job attitude and aptitude.
 - b) Assure that the operator reads and fully understands the complete manufacturer's owners/users manual.
 - c) Emphasize the impact of proper operation upon the operator, other personnel, material being handled, and equipment. Cite all rules and why they are formulated.
 - d) Describe the basic fundamentals of the dock leveling device and components design as related to safety, e.g., mechanical limitation, stability, functionality, etc.
 - e) Introduce the equipment. Show the control locations and demonstrate its functions. Explain how they work when used properly and maintained as well as problems when they are used improperly.
 - f) Assure that the operator understands the capacity rating, nameplate data, placards and all precautionary information appearing on the dock leveling device.
 - g) Supervise operator practice of equipment.
 - h) Develop and administer written and practical performance tests. Evaluate progress during and at completion of the course.
 - i) Administer periodic refresher courses. These may be condensed versions of the primary course and include on-the-job operator evaluation.

OWNER'S/USER'S RESPONSIBILITIES

- 7) Loading dock safety equipment should never be used outside of its vertical working range, or outside the manufacturer's rated capacity. It shall also be compatible with the loading equipment and other conditions related to dock activity. Please consult the manufacturer if you have any questions as to the use, vertical working range or capacity of the equipment. Only properly trained and authorized personnel should operate the equipment.
- 8) It is recommended that the transport vehicle is positioned as close as practical to the dock leveling device and in contact with both bumpers. When an industrial vehicle is driven on or off a transport vehicle during loading and unloading operations, the transport vehicle parking brakes shall be applied and wheel chocks or a restraining device that provides equal or better protection of wheel chocks shall be engaged. Also, whenever possible, air-ride suspension systems should have the air exhausted prior to performing said loading and unloading operations.
- 9) When goods are transferred between the loading dock and a trailer resting on its support legs/ landing gear instead of a tractor fifth wheel or converter dolly, it is recommended that an adequate stabilizing device or devices shall be utilized at the front of the trailer.
- 10) In order to be entitled to the benefits of the standard product warranty, the dock safety equipment must have been properly installed, maintained and operated in accordance with all manufacturer's recommendations and/ or specified design parameters and not otherwise have been subject to abuse, misuse, misapplication, acts of nature, overloading, unauthorized repair or modification, application in a corrosive environment or lack of maintenance. Periodic lubrication, adjustment and inspection in accordance with all manufacturers' recommendations are the sole responsibility of the owner/user.
- 11) Manufacturer's recommended maintenance and inspection of all dock leveling devices shall be performed in conformance with the following practices: A planned maintenance schedule program must be followed, only trained and authorized personnel shall be permitted to maintain, repair, adjust and inspect dock leveling devices, and only the use of original equipment manufacturer parts, manuals, maintenance instructions, labels, decals and placards or their equivalent. Written documentation of maintenance, replacement parts or damage should be kept. In the event of damage, notification to the manufacturer is required.
- 12) Loading dock devices that are structurally damaged or have experienced a sudden loss of support while under load, such as might occur when a transport vehicle is pulled out from under the dock leveling device, shall be removed from service, inspected by a manufacturer's authorized representative, and repaired or replaced as needed or recommended by the manufacturer before being placed back in service.

INTRODUCTION

General Information



Figure 3

This manual provides current information on the VSH-series dock leveler (Figure 3). Due to ongoing product improvement, some parts may have changed, along with operation and troubleshooting methods. This manual describes these changes where applicable.

The VSH series dock leveler comes equipped with an electrical control panel, which allows push button operation of the dock leveler functions. Each VSH dock leveler unit and control panel has been factory prewired and tested to ensure satisfactory operation.

To illustrate which connections are to be made in the field at installation, electrical drawings are included with each order or by contacting Systems, LLC Technical Services.

VSH dock levelers are available in the following sizes, weight capacities, and options:

Width

6 ft (1829 mm)
6.5 ft (1981 mm)
7 ft (2134 mm)

Length

5 ft (1524 mm)
6 ft (1829 mm)
8 ft (2438 mm)

Capacity (CIR*)

40,000 lb (18 144 kg)
45,000 lb (20 412 kg)
50,000 lb (22 680 kg)

* CIR (Comparative Industry Rating)

Call McGuire to discuss available Powerpack mounting configurations, voltages, phases and options to meet your specific needs.

Technical Service at 800-643-5424 or techservices@loadingdocksystems.com

Component Identification

Inspect package and all components. Report any missing or damaged items immediately and note on the shipping Bill Of Lading (BOL).

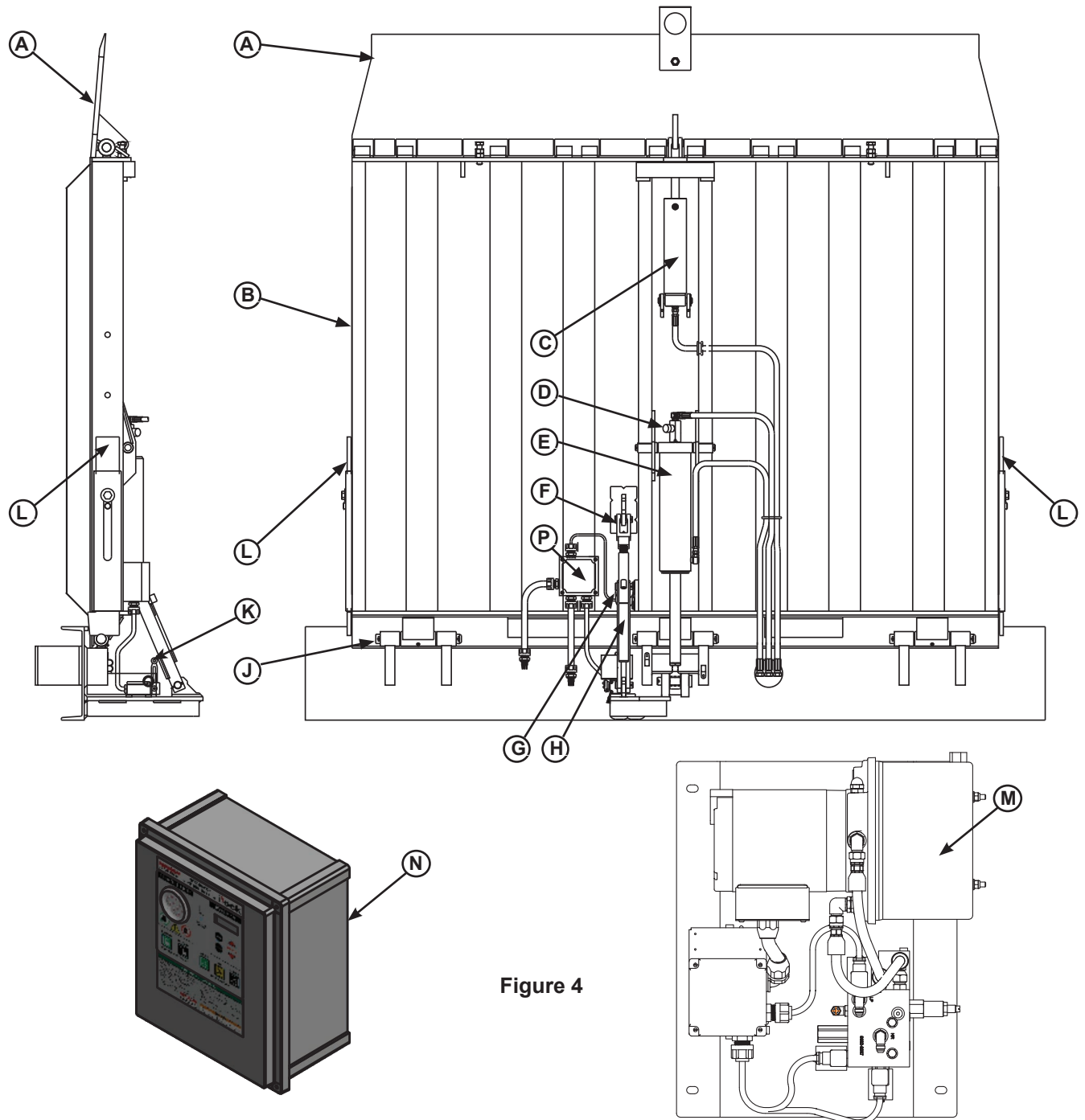


Figure 4

- | | | | |
|------------------------|--------------------------|---------------------------|--------------------|
| A — Lip | E — Hoist Cylinder(s)* | H — Storage Prop Assembly | M — Powerpack** |
| B — Platform | F — Storage Prop Yoke | J — Hinge Pins | N — Control Box |
| C — Lip Cylinder(s)* | G — Prop Kicker Solenoid | K — Stored Limit Switch | P — Platform J-Box |
| D — Flow Control Valve | | L — Maintenance Props | |

* Models may be equipped with 1 or 2 cylinders.

**Powerpack may be mounted on underside of leveler or remotely. Remote unit shown, see pages 50-52 for Powerpack options.

INSTALLATION

Installation Precautions

! DANGER

It is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

! WARNING

Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before installation is complete.

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

! WARNING

DO NOT grind or weld if hydraulic fluid or other flammable liquid is present on the surface to be ground or welded.

DO NOT grind or weld if uncontained hydraulic fluid or other flammable liquid is present. Stray sparks can ignite spills or leaks near the work area. Always clean up the oil leaks and spills before proceeding with grinding or welding.

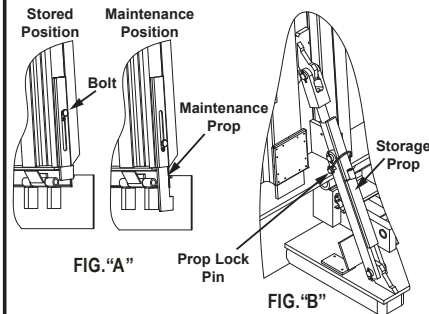
Always keep a fire extinguisher of the proper type nearby when grinding or welding.

! CAUTION

Only trained installation professionals with the proper equipment should install this product.

! DANGER

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL props have been properly positioned and secured. First, back out bolt to position side maintenance prop(s) as shown in figure "A" below. Then position storage prop and secure with prop lock pin as shown in figure "B" below. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.



! DANGER

CRUSH HAZARD
DO NOT REMOVE hydraulic cylinder until leveler is safely supported by maintenance prop. Refer to owner's/user's manual for proper maintenance procedure. Failure to comply will result in death or serious injury.

NOTICE

DO NOT connect the dock leveler electrical wiring and ground connections until all welding has been completed.

DO NOT ground welding equipment to any hydraulic or electrical components of the dock leveler. Always ground welding equipment to the vehicle restraint base, NEVER to the moving components.

Failure to follow these instructions may damage the motor, hydraulics, wiring, and/or control panel.

NOTICE

Installation of vertical dock levelers from inside is recommended, as combined height of leveler and proper lifting equipment may be greater than outside door height.

Prepare Pit

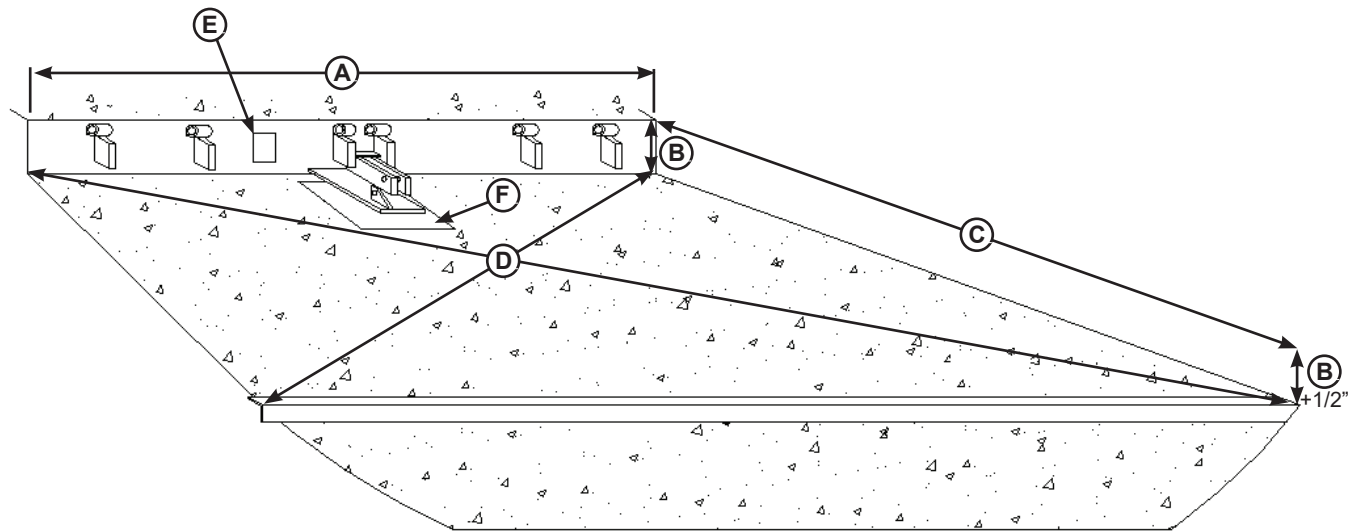


Figure 5

A—Pit Width

B—Pit Depth (Dock Floor-to-Pit Floor)

C—Pit Length

D—Distance (Pit Corner-to-Corner)
(Top, Bottom, and Both Sides)

E—Electrical Junction Box

F—Floor Embed Plate

Before lowering the dock leveler into the pit, the following must be performed:

1. Remove all debris from the pit and sweep the pit clean.
2. Check the entire dock leveler pit for proper construction according to approved/certified pit drawings. Make sure pit is square, has the proper depth and taper by making the following measurements (see **Figure 5**):

- Measure pit width distance (**A**) at both front and rear of pit.
- Measure dock floor-to-pit floor distance (**B**) on both sides of the rear embed channel and at front if applicable.
- Measure pit floor taper; rear to front cannot exceed 1/2" total taper.
- Measure pit length distance (**C**) at both sides.
- Measure corner-to-corner (cris-cross) distance (**D**) at both sides. Take measurements at dock floor level and at pit floor level.

Note: If any measurements are off by more than 1/8 in. (3.2 mm) in depth and/or width, or 1/4 in. (6.3 mm) in squareness, contact Technical Services before proceeding.

3. Make sure the field junction box for the dock leveler (**E**) and floor embed plate (**F**) is at the correct location per pit diagrams.

Retrofit installations: Refer to the job-specific layout drawings provided by Systems, LLC for retrofit installations. Hinge plate weldment must be welded to embed channel along top, bottom, both sides, and all holes must be plug welded.

Contact Systems, LLC Technical Services for digital copies of layout drawings if required.

INSTALLATION

Prepare Dock Leveler

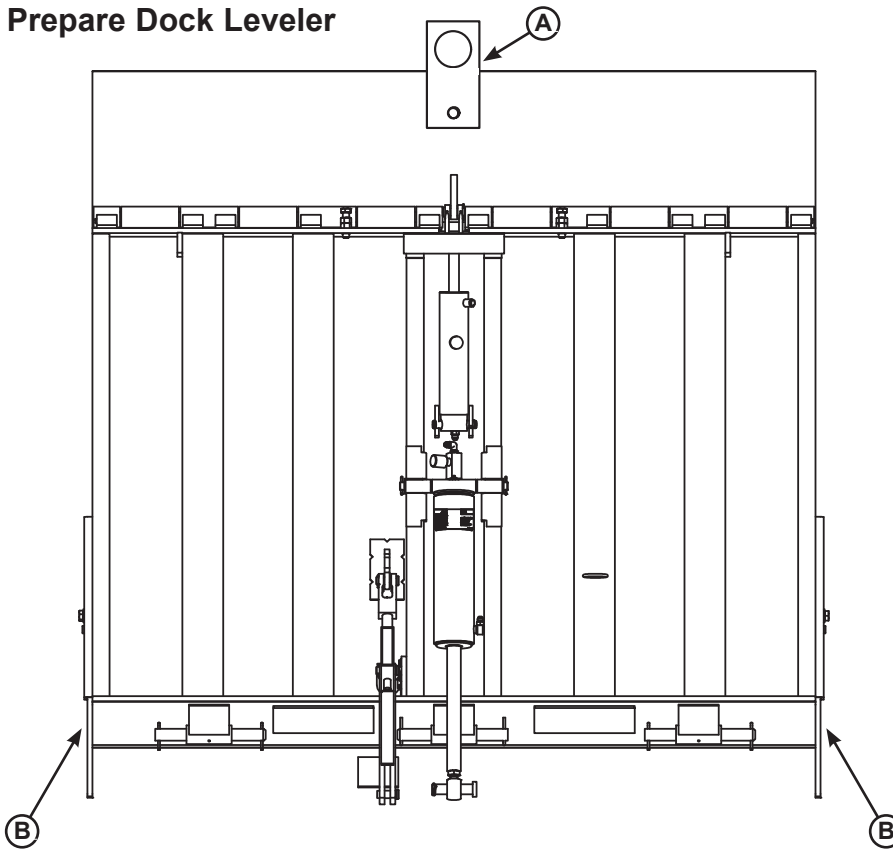


Figure 6

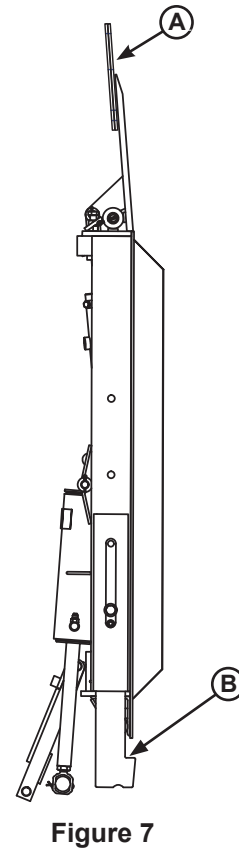


Figure 7

A— Lifting Brackets

B — Maintenance Props

! DANGER

CRUSH HAZARD
DO NOT REMOVE hydraulic cylinder until leveler is safely supported by maintenance prop. Refer to owner's/user's manual for proper maintenance procedure. Failure to comply will result in death or serious injury.

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! DANGER

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL props have been properly positioned and secured. First, back out bolt to position side maintenance prop(s) as shown in figure "A" below. Then position storage prop and secure with prop lock pin as shown in figure "B" below. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.

Stored Position Maintenance Position

Bolt Maintenance Prop Storage Prop

FIG. "A" Prop Lock Pin FIG. "B"

1751-1293

! WARNING

The dock leveler is heavy. Use a lifting device and chains with the appropriate lifting capacity and reach.

Always use the lifting brackets provided with the unit whenever lowering or lifting a dock leveler.

Prepare Dock Leveler (continued)

NOTICE

Installation of vertical dock levelers from inside is recommended, as combined height of leveler and proper lifting equipment may be greater than outside door height.

1. Remove any control panel, bumpers or palletizing that may be banded to the dock leveler. Do not remove banding on hoist cylinder.
2. Make sure the mounting hardware of lifting brackets (**A**) is snug. The brackets should pivot without binding on the mounting cap screw.
3. Attach lifting chains to lifting brackets (**A**) and to a lifting device (i.e., hoist or fork truck) having the appropriate lifting capacity and reach (see Figure 8).

NOTICE

Overall length of lifting chain and bracket must be kept to a minimum to prevent interference between the lifting equipment and the building ceiling or door as the dock leveler is lowered into the pit.

4. Ensure maintenance props (**B**) are in the lowered position and tightly secured (see **Figures 6 and 7**).

Note: Maintenance props must be in the lowered position and tightly secured during installation and service.

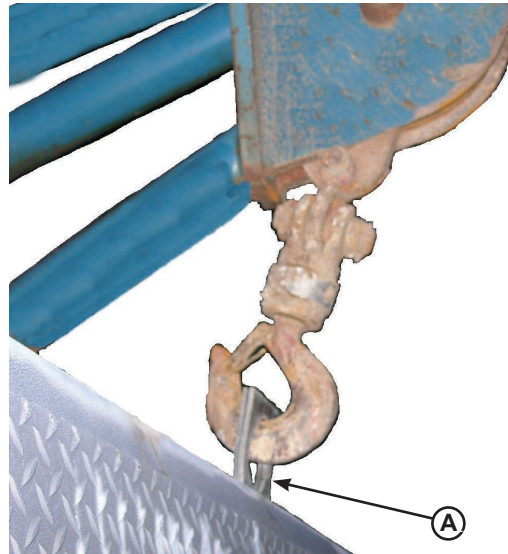


Figure 8

INSTALLATION

Install Dock Leveler

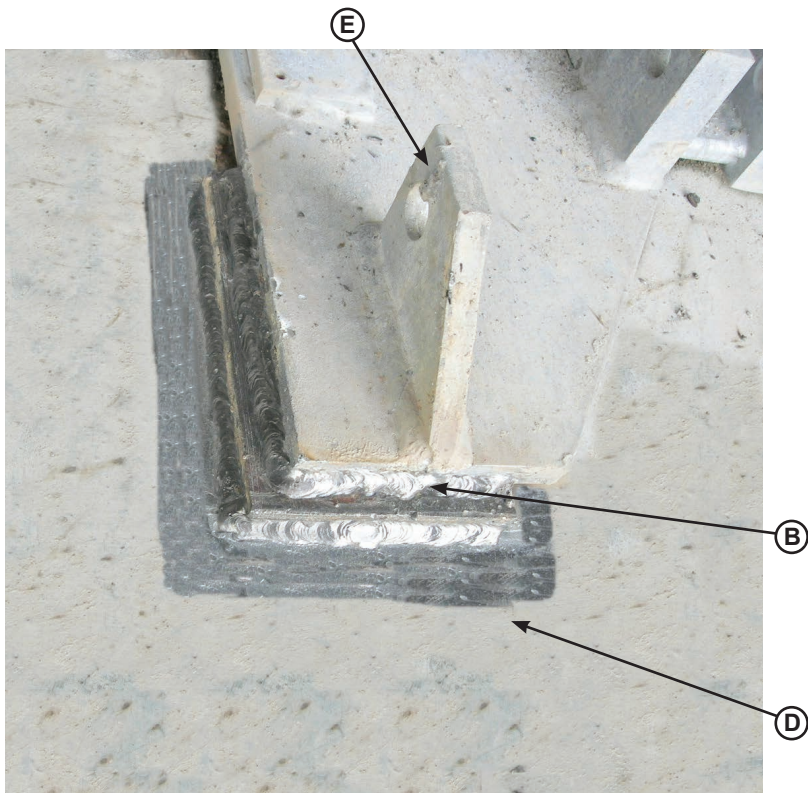


Figure 9

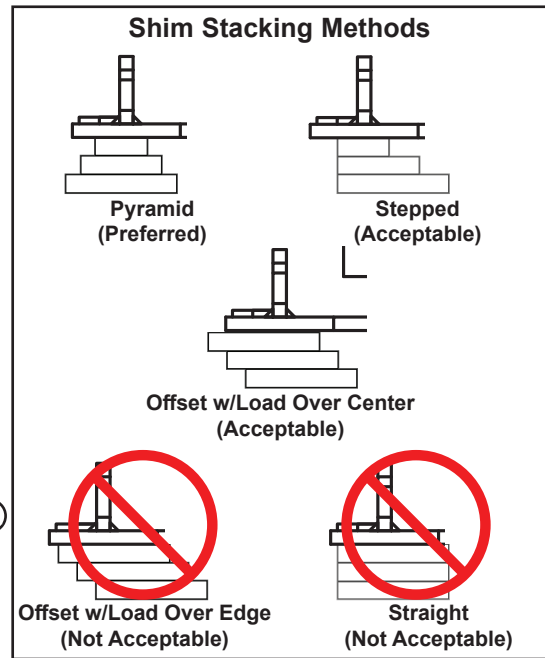


Figure 10

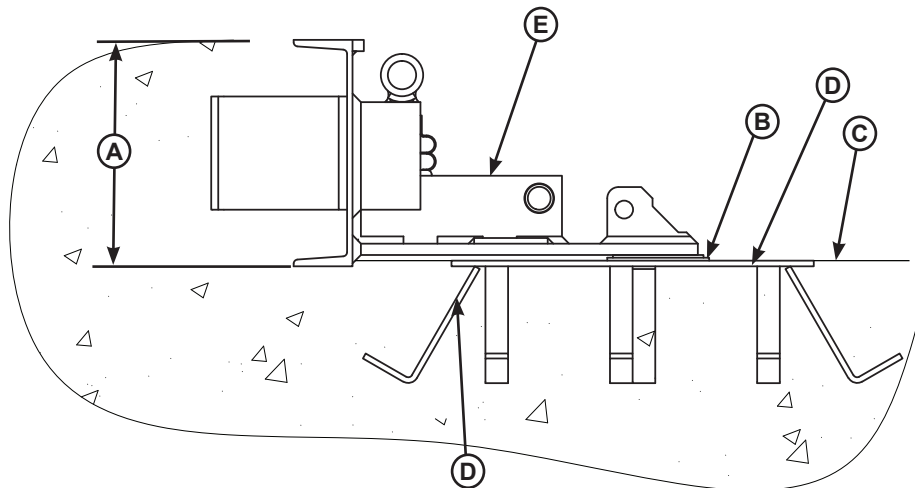


Figure 11

A — Pit Height/Embed Height
 B — Shim Location (Under Storage Prop)
 C — Pit Floor

D — Pit Floor Embed
 E — Leveler Rear Embed

Install Dock Leveler (continued)



Figure 12

(E)

Bottle Jack

E— Leveler Rear Embed
F— Dock Leveler

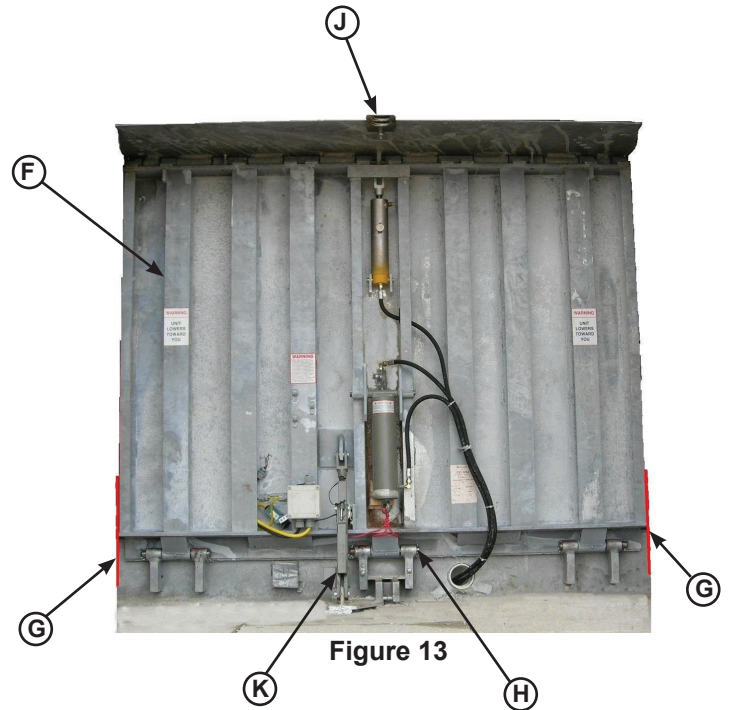


Figure 13

G— Maintenance Props
H— Hinge Pins

J— Lifting Lug
K— Storage Prop

10" pit models only: Before installing the leveler, the storage prop trunnion (K) in the rear embed channel (E) must be shimmed (B) and welded to the embed on the pit floor (D). See **Figures 9, 10 and 11.**

NOTICE

The minimum size of the shim that contacts the leveler embed (i.e. the top shim of each shim stack) must be at least 4" x 4" (101.6 mm x 101.6 mm) to support the full width of the hoist cylinder/storage prop weldment and to provide a shelf for a fillet weld.

Use the thickest shim stock possible for stability and weld penetration purposes. **DO NOT** use multiple layers of 1/8 in. (3.18 mm) or thinner shim stock.

1. Lube the three rear hinge pins (H) using grease, then install the three pins in the rear embed only halfway through the first hinge tube.

2. Lower the dock leveler down, centering the leveler's three hinges with the embed's hinges.

- Insert the hinge pins. Work across the dock leveler, installing one side, then the center, and finally the other side. See **Figure 13.**
- **Optional:** Use a bottle jack to help align the rear of the dock leveler to the embed channel as shown in **Figure 12.**

3. Once the three hinge pins are installed, install the storage prop (K). Install the prop pin and clip.

4. Remove banding from hoist cylinder.

Note: Do not connect hoist cylinder at this time. Air must be purged from system; see pages 18-19.

INSTALLATION

Install Control Panel and Wiring

! DANGER

Make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

! WARNING

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

! CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and final connections to the pit junction box — must be performed by a certified electrician and conform to all local and applicable national codes.

NOTICE

DO NOT connect any dock equipment electrical wiring or ground connections until all welding has been completed.

DO NOT ground welding equipment to any electrical components of the dock equipment. Always ground welding equipment to the dock leveler frame, NEVER to the platform.

Failure to follow these instructions may damage the motor, wiring, and/or control panel.

NOTICE

Where indicated, all components must be connected to a SAFETY EARTH GROUND that conforms to the 1999 National Electrical Code Section 250-50 section (a) or section (c) for a grounding electrode system.

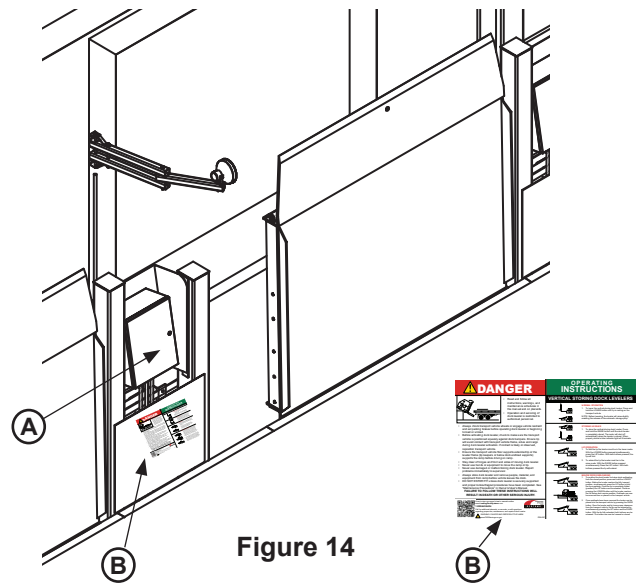


Figure 14

A— Control Panel

B— Placard

1. If wall-mounting, mount the control panel (A) so bottom of control panel-to-dock floor distance is approximately 48 in. (1219 mm). (See **Figure 15**.) If stanchion-mounting, mount control box to stanchion in desired location. (See **Figure 14**.)

2. Install electrical disconnect panel if not already installed (provided by others).

3. Install and connect the control wiring as shown in installation drawings.

4. Connect the control wiring to the field wires in the dock equipment junction boxes. Refer to the electrical diagrams supplied with the dock equipment.

Note: When installing electrical controls in a temperature-controlled environment, the installer must determine an appropriate means to isolate/prevent thermal and vapor transfer through electrical conduit where conduit routing crosses temperature zones. Systems, LLC is not responsible for any damage due to moisture collecting inside the control panel caused by improper isolation/prevention of thermal and vapor transfer through the conduit. Refer to Tech Service Bulletin 19-053 for more information.

5. Install placard (B). Make sure placard is in plain view of dock leveler and/or vehicle restraint operations. Suggested placement of placard is near control box attached to electrical conduit by using nylon cable tie. (See **Figure 14 or 15**), depending on mounting control box mounting method. .

Placard Installation Instructions

1. Installers and/ or Owner's/ User's are responsible for the installation and placement of product placards.
2. Placard must be in plain view of dock leveler and/ or vehicle restraint operations.
3. Suggested placement of placard is near control box, attached to the wall or electrical conduit using a cable tie. If the equipment does not have a control panel, mount the placard on the wall to the immediate left of leveler at eye level.

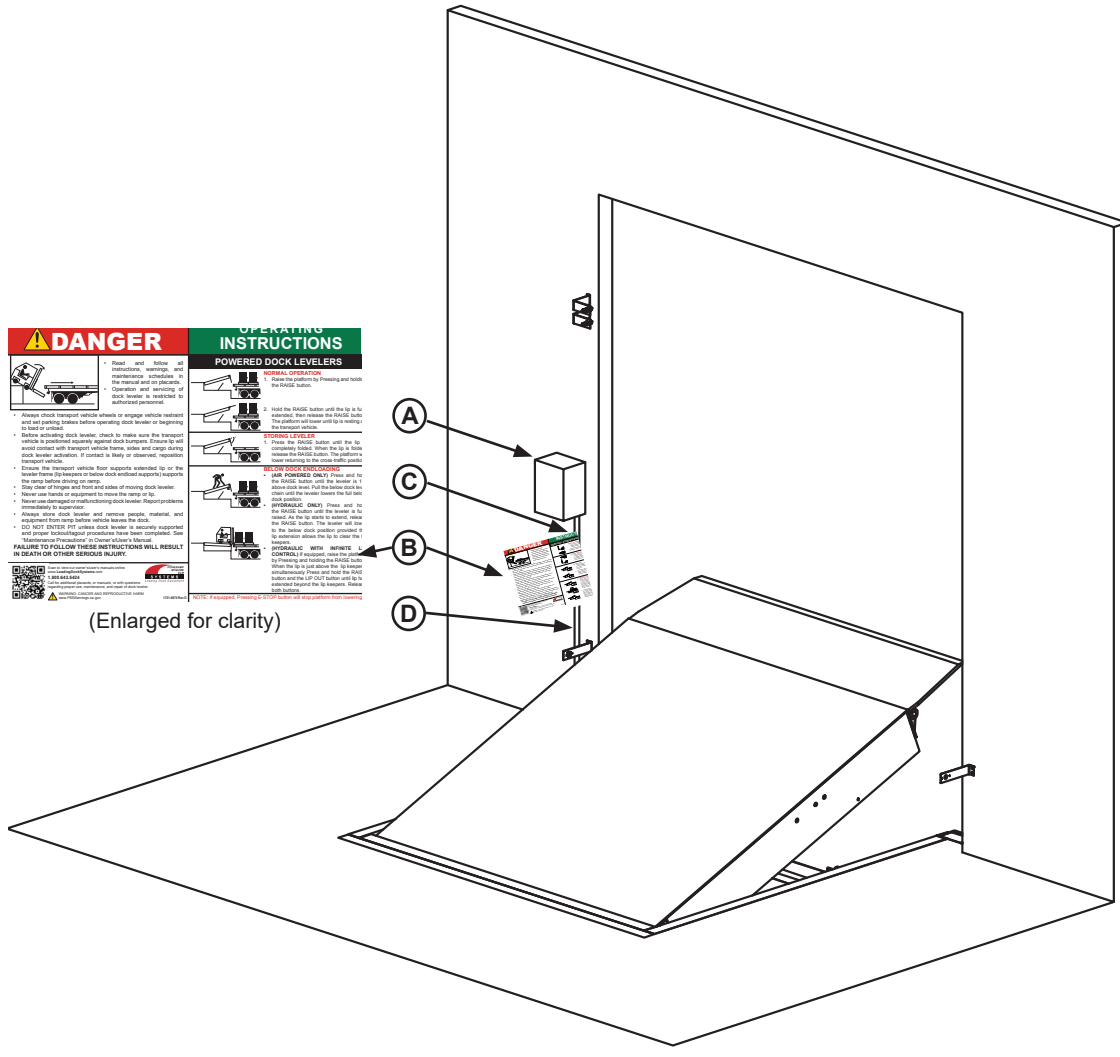


Figure 15

A—Control Box

B— Placard

C— Nylon Cable Tie

D— Conduit

Figure 15

INSTALLATION

Purging Air From VS Hydraulic System & Adjusting Yoke

DANGER

Following start-up, or if the platform is raised using an external lifting device or the hydraulic system is opened to atmosphere, air will enter into the hydraulic system. Whenever this happens, air must be fully purged from the hydraulic system.

1. Using an external lifting device, support the VS leveler in the upright and stored position, with the maintenance props lowered in the maintenance position and all hardware tightened by wrench.
2. Lock out the storage prop (A) with the prop pin and clip, then lock-out and tag-out the leveler.
3. Remove the screws holding the stored limit switch (B) in place. Move the stored limit switch away from the storage prop. See **Figure 16**.
4. If connected, remove the rue clip (C) and disconnect the lower hoist cylinder mounting pin (D). See **Figure 17**.
5. **This step is for new equipment installations only:** For platform-mounted reservoirs only, remove plug (L) and insert the breather assembly. The breather (K) should face toward the leveler. This will orientate the breather upwards during loading/unloading. See **Figure 20**.
6. Fully open the down speed flow control valve (E) by loosening the set screw (J) and turning knob (F) counter-clockwise (see **Figure 18**). Record the number of turns/original setting, to reset flow rate after purging.
7. Safely energize the dock leveler control box. Confirm the BLUE “Leveler Stored” indicator light on control panel is no longer illuminated.
8. With the cylinder disconnected from the embed, cycle the hoist cylinder up and down, **without fully extending the rod**. Then fully cycle the cylinder at least 6 times, using the leveler’s own hydraulic power.
9. Reconnect the hoist cylinder yoke (G) to the base of the embed or carriage by completing the following steps:
 - a. Fully extend the hoist cylinder by pressing and holding the RAISE button until the rod stops extending and the powerpack goes into pressure

relief.

- b. Loosen the jam nut (H) and adjust the yoke (G) so that the center of the yoke is half way below the center of the hole of the embed (see **Figure 19**). After adjusted, tighten the jam nut.

- c. To center the rod eye with the embed, tap the lower button on the control panel until the cylinder pin (D) easily slides through both the trunnion and rod eye.

Note: A bottle jack may help with pin installation. See **Figure 21**.

- d. Lock rue clip (C) into place as shown in **Figure 17**.

10. Reinstall the stored limit switch (B). Confirm the BLUE “Leveler Stored” indicator light on control panel is illuminated.

11. Reset the down speed flow control valve to the original setting recorded in step 6.

Note: If original setting was lost or not recorded, flow control can be set manually by using instructions on page 30.

12. Once ideal down speed flow control setting is achieved, lock the adjustment in place by tightening the set screw (J) on the adjustment knob.

13. Raise the maintenance props to the stored position and tighten all hardware with wrench. Then remove storage prop pin and clip.

14. Disconnect the external lifting device and chains from the lifting bracket(s).

15. Press the LOWER button and bring the leveler to a 45 degree angle.

16. Cycle lip by pressing the LOWER and LIP buttons together to lower the lip, then press the RAISE and LIP buttons together to raise the lip. Lip cylinder is now purged.

17. Raise leveler to stored position and top off hydraulic fluid as required. See pages 26-27 for correct fluid level and type.

DANGER

Do not remove the prop lock pin from the storage prop unless authorized personnel have confirmed that the hydraulic cylinders, valve and hoses have been properly installed and filled with fluid. Failure to do so will result in death or serious injury. Refer to owner’s/user’s manual for proper procedure. 1751-0229 Rev E

INSTALLATION

Purging Air From VS Hydraulic System & Adjusting Yoke(continued)

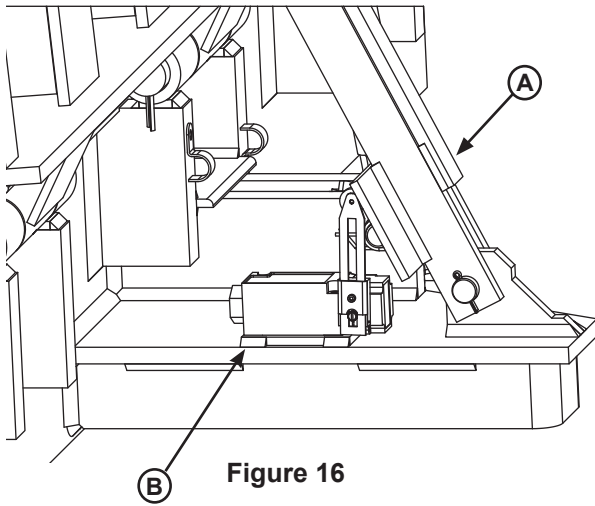


Figure 16

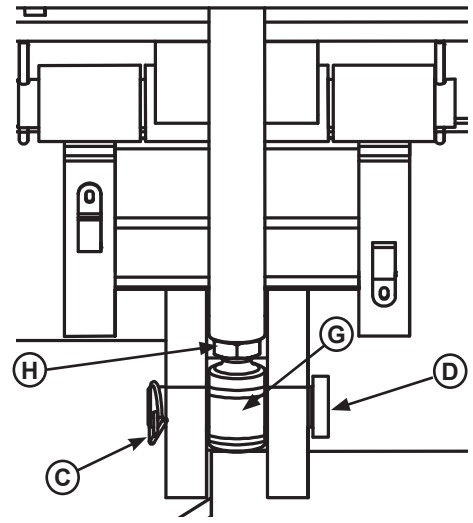


Figure 17

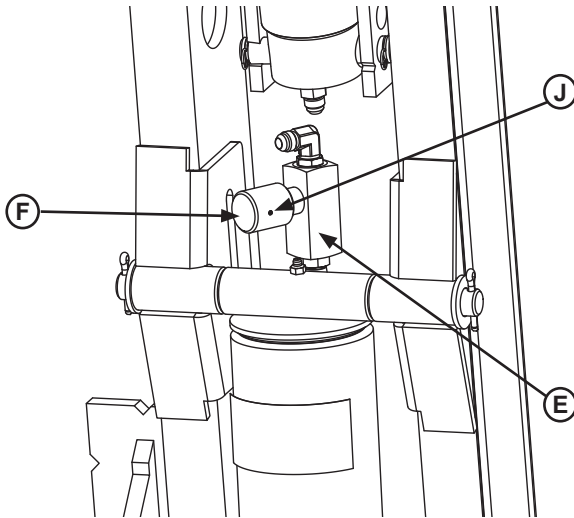


Figure 18

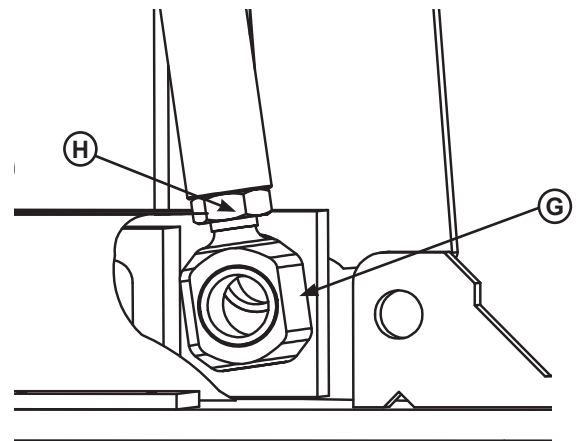


Figure 19

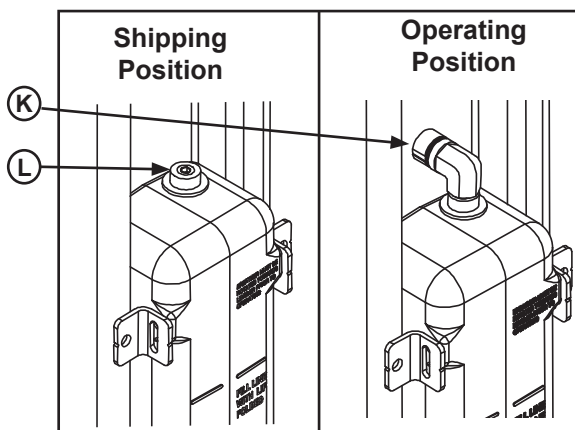


Figure 20



Figure 21

A — Storage Prop
B — Stored Limit Switch
C — Rue Clip

D — Hoist Cylinder Pin
E — Flow Control Valve
F — Adjusting Knob

G — Yoke
H — Jam Nut
J — Set Screw

K — Breather
L — Plug

INSTALLATION

Put New Dock Leveler Into Service

WARNING

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

1. Purge air from hydraulic system, adjust yoke and install cylinder pin as instructed on pages 18-19.
2. Check and top off hydraulic fluid as required. See pages 26-27 for acceptable fluid specifications and correct fluid level.
3. Test leveler for operation:
 - a. Follow the dock equipment's sequence of operation to allow the leveler to operate. Then press and hold the lower button until the platform is level with the dock floor. See **Figure 22**.

Note: The hydraulic circuit uses a pressure relief valve that allows the hoist cylinder to retract under a preset load. Slowly driving a forklift's front wheels only onto the platform, or walking out to the end of the platform, will cause the platform to lower.

b. Make sure the platform lowers to the pit floor, while standing on the platform or slowly driving a forklift's front wheels onto it. See **Figure 22**. If the platform does not reach to pit floor, check the adjustment of the yoke to allow proper travel. See pages 18-19.

c. (Remove forklift if used in previous step.) Press and hold the RAISE button until the leveler is fully stored and the BLUE "Leveler Stored" light comes on.

d. Lower dock leveler to approximately 45 degrees, then press the LOWER and LIP buttons simultaneously; the lip will fold. Press and hold the RAISE and the LIP buttons and the lip will extend. Then, press and hold the RAISE button until the leveler is fully stored and the BLUE "Leveler Stored" light comes on.

Note: If the dock leveler encounters issues during testing and must be raised with an external lifting device, the hydraulic system must be purged again. See pages 18-19.

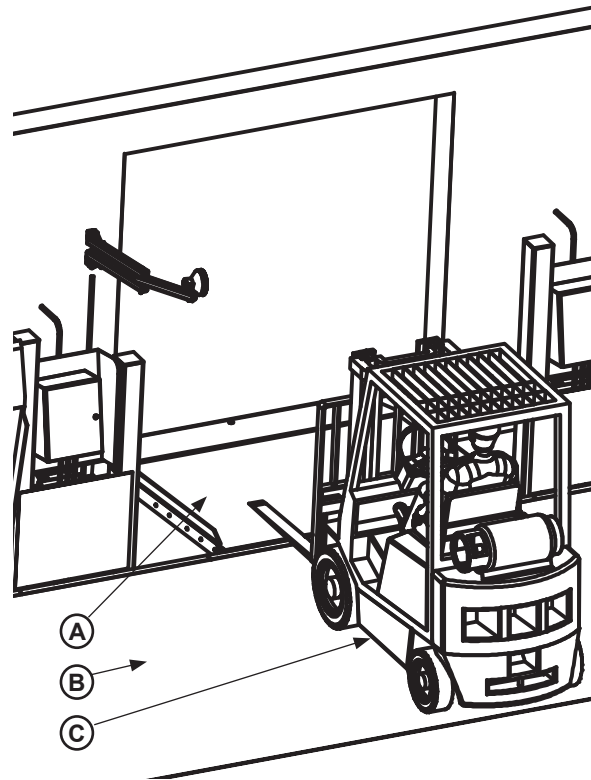


Figure 22

- A— Leveler Platform C— Fork Lift
B— Dock Floor

Operational Precautions

DANGER

Stay clear of dock leveler and vehicle restraint when transport vehicle is entering or leaving dock area.

DO NOT move or use the dock leveler or restraint if anyone is under or in front of leveler.

Keep hands and feet clear of pinch points. Avoid putting any part of your body near moving parts.

WARNING

Only trained personnel should operate the dock leveler.

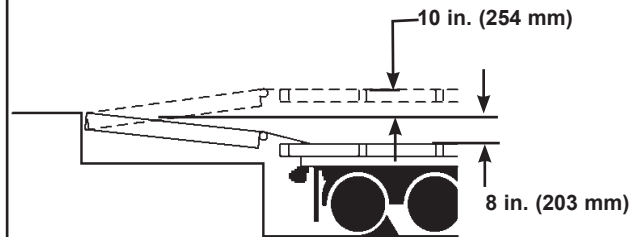
DO NOT use a broken or damaged dock leveler. Make sure proper service and maintenance procedures have been performed on leveler before using.

Transport vehicle wheels must be chocked unless a vehicle restraint is used. Never remove the wheel chocks until loading/unloading is finished and transport driver has been given permission to leave.

Make sure platform lip rests on the transport vehicles bed with at least 4 in. (102 mm) of overlap.

Maintain a safe distance from side edges of leveler during the loading/unloading process.

WARNING



The VSH hydraulic dock leveler is designed to compensate for a maximum +10 in. (254 mm) above and - 8 in. (203 mm) below dock difference between the loading dock and the transport vehicle bed*. DO NOT use the dock leveler if the transport vehicle bed is more than 10 in. above (higher than) or 8 in. below (lower than) the dock floor.

*Service height may vary with design specifications.

DO NOT overload the dock leveler.

DO NOT operate any equipment while under the influence of alcohol or drugs.

DO NOT leave equipment or material unattended on the dock leveler.

OPERATION

Operating Instructions

Ramp Loading/Unloading

1. Before activating dock leveler, check to make sure the transport vehicle is positioned squarely against dock bumpers. Ensure lip will avoid contact with transport vehicle frame, sides and cargo during dock leveler activation. If contact is likely or observed, reposition transport vehicle.
2. Instruct driver to remain at the dock until the loading or unloading process has been completed.
3. Chock the transport vehicle wheels, or use a vehicle restraint if available.
4. Extend the dock leveler onto the transport vehicle as follows:
 - a. Press and hold the LOWER button until leveler reaches the floor of the transport vehicle.
 - b. Make sure that the lip is fully extended and supported on the transport vehicle along the entire width of the platform, with at least 4 in. (102 mm) of lip contacting the transport vehicle bed.

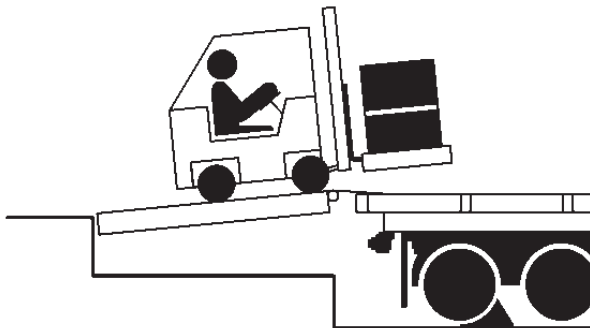


Figure 23

5. Proceed with loading or unloading the transport vehicle, see **Figure 23**.
6. When loading or unloading is finished, raise the platform by pressing and holding the RAISE button until the BLUE "Leveler Stored" light turns on.
7. Remove chocks from transport vehicle wheels, or release the vehicle restraint if used.
8. Indicate to driver that the transport vehicle may leave the dock.

Below Dock End Loading/Unloading

1. Before activating dock leveler, check to make sure the transport vehicle is positioned squarely against dock bumpers. Ensure lip will avoid contact with transport vehicle frame, sides and cargo during dock leveler activation. If contact is likely or observed, reposition transport vehicle.
2. Instruct driver to remain at the dock until the loading or unloading process has been completed.
3. Chock the transport vehicle wheels, or use a vehicle restraint if available.



Figure 24

4. Press and hold the LOWER button until unit is about 45 degrees forward, then press the LIP and LOWER buttons simultaneously and the lip will fold pendant.
5. Once the lip is pendant, continue to press the LOWER button until the unit goes to the full below dock position.
6. Proceed with loading or unloading, **Figure 24**.
Note: When end unloading is finished and access to the rest of the transport vehicle is still required, the platform lip will need to be extended. Press and hold RAISE button to clear the transport vehicle bed, then press the LIP and RAISE buttons simultaneously to extend the lip. Once lip is extended, follow instructions for Ramp Loading/Unloading.
7. When loading or unloading is finished, raise the platform by pressing and holding the RAISE button until the BLUE "Leveler Stored" light turns on.
8. Remove chocks from transport vehicle wheels, or release the vehicle restraint if used.
9. Indicate to driver that the transport vehicle may leave the dock.

Operating Instructions (continued)

End Loading/Unloading (w/Optional Lip Keepers)

Note: Units with optional lip keepers can complete regular end loading/unloading without going below dock.

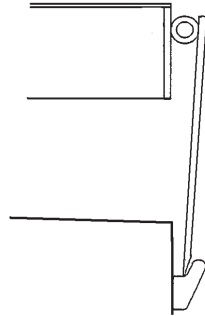


Figure 25

1. Check to make sure the transport vehicle is positioned squarely against dock bumpers.
2. Instruct driver to remain at the dock until the loading or unloading process has been completed.
3. Chock the transport vehicle wheels, or use a vehicle restraint if available.
4. Press and hold the LOWER button until unit is about 45 degrees forward, then press the LIP and LOWER buttons simultaneously and the lip will fold pendant.
5. Once the lip is pendant, continue to press the LOWER button until the unit descends into the lip keepers, see **Figure 25**.

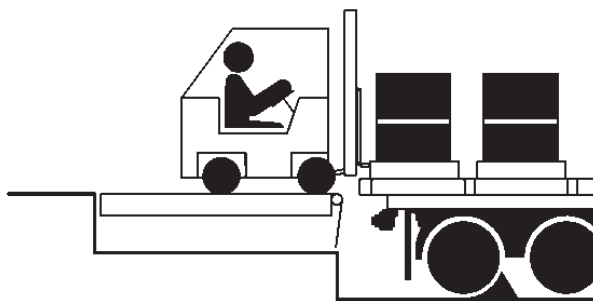


Figure 26

6. Proceed with loading or unloading, see **Figure 26**.

Note: When end unloading is finished and access to

the rest of the transport vehicle is still required, the platform lip will need to be extended. Press and hold RAISE button to clear the transport vehicle bed, then press the LIP and RAISE buttons simultaneously to extend the lip. Once lip is extended, follow instructions for Ramp Loading/Unloading on page 22.

7. When loading or unloading is finished, raise the platform by pressing and holding the RAISE button until the BLUE "Leveler Stored" light turns on.
8. Remove chocks from transport vehicle wheels, or release the vehicle restraint if used.
9. Indicate to driver that the transport vehicle may leave the dock.

MAINTENANCE

Maintenance Precautions

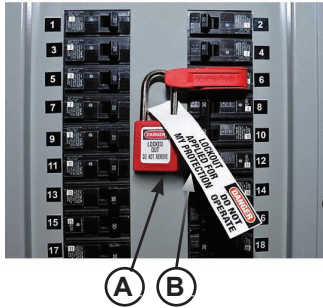


Figure 27

A— Lock Out Device
B—Tag Out Device

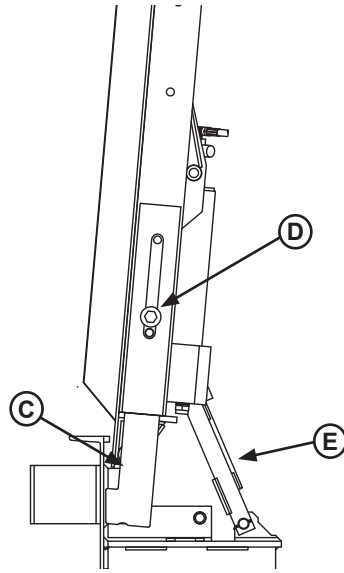


Figure 28

C — Maintenance Props
D — Maintenance Prop Hardware

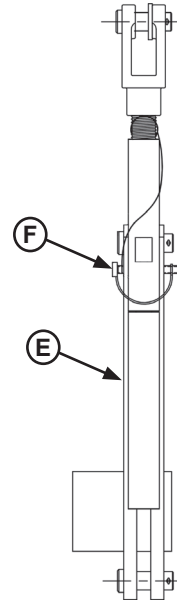


Figure 29

E — Storage Prop
F — Storage Prop Pin and Clip

! DANGER

It is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

When working with electrical or electronic controls, make sure that the power source has been tagged (A) and locked out (B) according to OSHA regulations and approved local electrical codes See **Figure 27**.

! WARNING

Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the unit before maintenance is complete.

When maintenance is to be performed on the dock leveler, place the maintenance props (C) in their service/down position with hardware (D) tightened by wrench. Ensure the storage prop (E) is locked out with the prop pin and clip (F). See **Figures 28 and 29**. The lip may fold down if the platform has rested on the maintenance props.

Only the person servicing the equipment should have the capability to remove the lockout devices. The tag out devices* must inform that repairs are in process and clearly state who is responsible for the lockout condition.

! WARNING

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

* Refer to OSHA regulations 1910.146. Confined Space and 1910.147. Lockout/Tagout

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MAINTENANCE

Periodic Maintenance

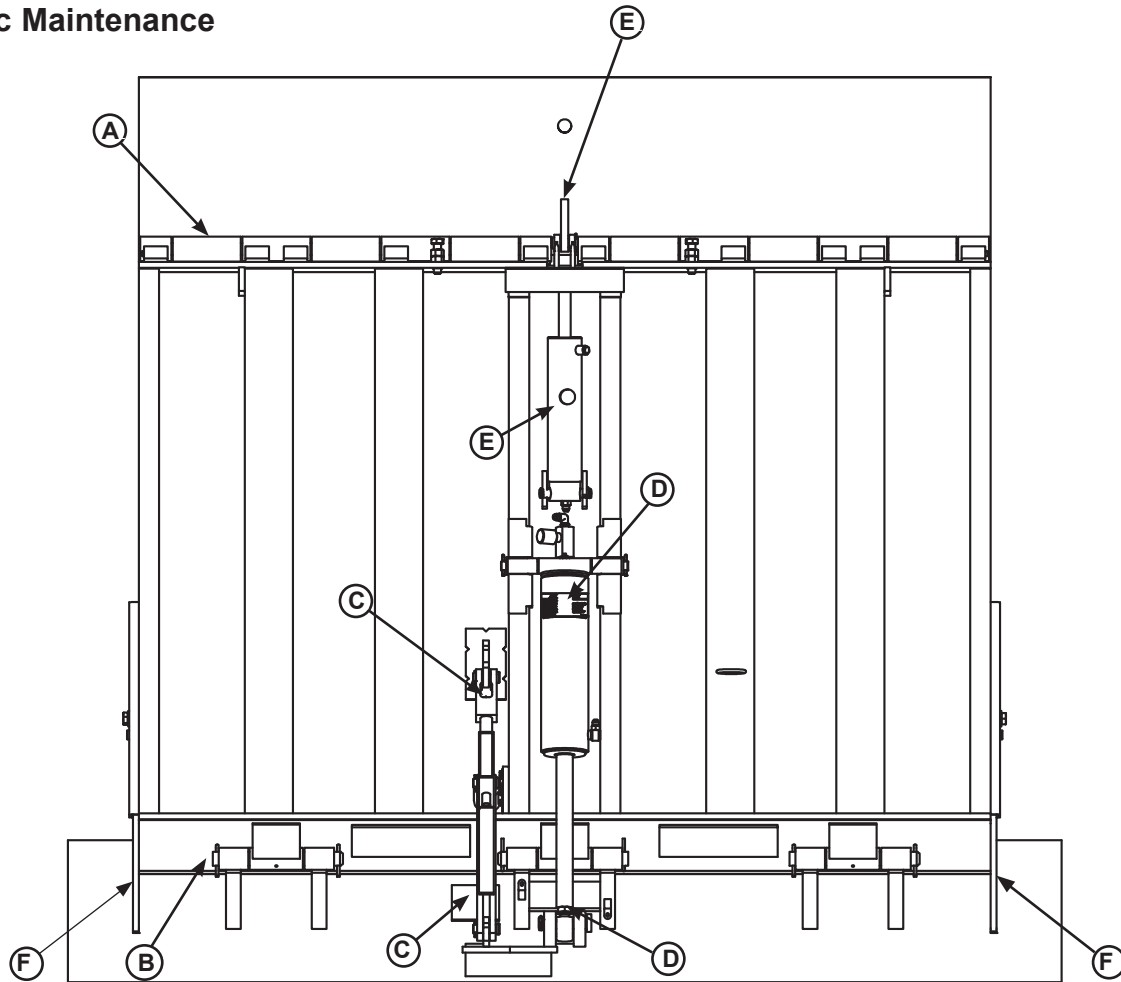


Figure 30

A— Lip Hinge Area
B— Platform Pins

C— Storage Prop
D— Hoist Cylinder

E— Lip Cylinder
F— Maintenance Props

To ensure normal operation of the dock leveler, use only aircraft hydraulic fluid designed to meet or exceed military specification MIL-H-5606-G. It is recommended that the following hydraulic fluids be used:

- ULTRA-VIS-HVI-15
- Aero Shell Fluid 4 or Fluid 41
- Mobil Aero HFA Mil-H5606A or Aero HF
- Texaco Aircraft Hydraulic Oil 15 or 5606
- Exxon Univis J13
- Castrol Brayco Micronic 756

These fluid brands can be mixed together. Use of hydraulic fluids with equivalent specifications to those listed here are acceptable.

NOTICE

Use of fluids that do not have equivalent specifications to those in the preceding list will result in abnormal operation of the dock leveler and voiding of warranty.

Weekly Maintenance

- Operate the dock leveler through the complete operating cycle to maintain lubrication. Verify lip operates up and down.
- Lock out and tag out the dock leveler, then ensure the storage prop is locked out with the prop pin and clip, and place the maintenance props in their service/down position with hardware tightened by wrench.
- Remove any debris or foreign objects from the lip hinge, rear hinge and limit switch areas.
- Inspect warning decals and placards. Replace if damaged or missing.

Quarterly Maintenance

- » Complete Weekly Maintenance.
- » Inspect the following for damage/abnormal wear:
 - Check welds for cracks.
 - Solenoids for cracks or bent valves.
 - Lower pin and mounting holes.
 - Rear hinge pins and cotter pins.
 - Stored limit switch is securely mounted.
 - Rue clip is in manual lock position.
 - Check J-box for water damage.
 - Hoses, cylinders, fittings and powerpack.
 - Control box and conduit for damage
 - Check fluid level with the unit in stored position.
 - Bumpers for more than 1" of wear. Replace worn, loose, damaged or missing bumpers.

- » Lubricate the following areas with light weight machine oil, see **Figure 30**:

- (A)— Lip hinge area (apply oil to the top of the entire length of lip hinge when platform is in the stored position and lip is folded)
- (B)— Platform hinge area (apply oil to top of all platform hinges when platform is in the stored position)
- (C)— Storage prop pins
- (E)— Lip cylinder pins

- » Lubricate the following areas with white lithium grease:

- (D)— Hoist cylinder grease fitting and pin

Note: Apply grease to all hinge grease fittings if equipped.

NOTICE

Failure to properly lubricate the dock leveler will cause abnormal operation of the leveler.

- » Check reservoir fluid level. See **Figure 31** for Self-Contained models, or page 28 for remote-mount powerpacks):

1. Position the dock leveler in the stored position with the lip folded.
2. Turn OFF all electrical power to the leveler.
3. Lock out and tag out the dock leveler, then place the maintenance props in their service/down position with hardware tightened by wrench, and ensure the storage prop is locked out with the prop pin and clip.
4. Make sure fluid is within 1/2" of fluid fill line marked on reservoir. Excessive fluid above fill line may cause a fluid to leak through the breather plug (G).

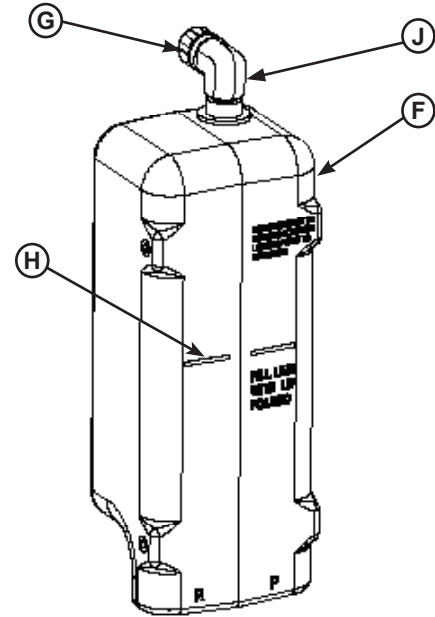


Figure 31

F — Reservoir
G — Breather Plug
H — Fill Line
J — Elbow

5. Remove elbow (J) to add fluid.
6. Add hydraulic fluid if necessary. Use only recommended fluid, see page 26.
7. Install elbow (J) and rotate to position shown in **Figure 31**.
8. Raise the maintenance props to the stored position and tighten all hardware, then remove prop pin and clip.
9. Turn ON electrical power to the leveler.
10. Return the lip to the raised position.

- » Check platform relief function:

1. Lower the platform to 6" above dock floor or a transport vehicle bed.
2. Slowly drive a forklifts front wheels only onto the platform, or walk out to the end of the leveler.

Note: It may take more than 1 person for platform to lower in previous step.
3. As the forklift or person travels across the platform, the leveler should begin to lower.
4. Remove forklift or person from the leveler and return the leveler to the stored position.

Yearly Maintenance

- » Complete Quarterly Maintenance.
- » Change hydraulic oil (may be required more often depending upon conditions).

MAINTENANCE

Checking Reservoir Fluid Level (Remote-Mount Powerpacks)

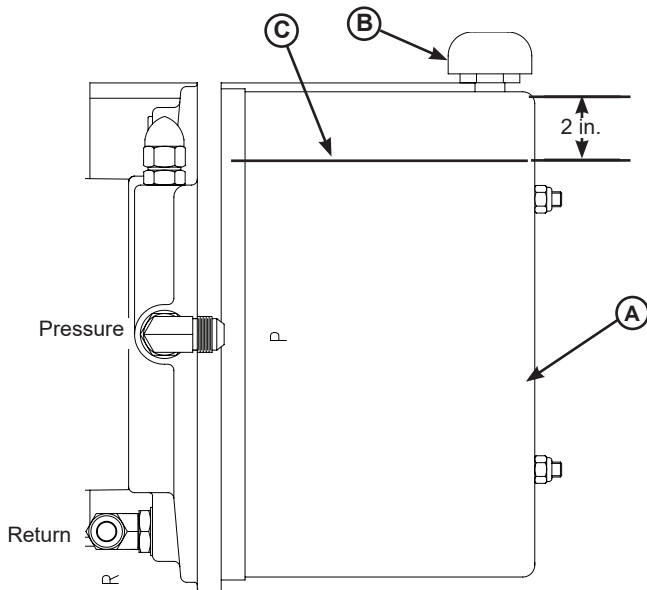


Figure 32
A — Reservoir
B — Breather Cap
C — Fluid Level

1. The dock leveler must be in the stored position with the lip folded.
2. Turn OFF all electrical power to the leveler
3. Lock out and tag out the dock leveler, then place the maintenance props in their service/down position with hardware tightened by wrench, and ensure the storage prop is locked out with the prop pin and clip.
4. Remove breather cap (B).
5. Measure fluid level. The fluid level should be approximately 2 in. (51 mm) from top of reservoir (C) with platform stored and the lip in the folded position.
6. Add hydraulic fluid if necessary. Use only recommended fluid (see page 26).
7. Install breather cap (B).
8. Raise the maintenance props to the stored position and tighten all hardware, then remove prop pin and clip.
9. Remove lock out/tag out devices and turn ON electrical power to the leveler.
10. Return the lip to the raised position.

! DANGER

It is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

! WARNING

When service under the dock leveler is required, always lock all electrical disconnects in the OFF position after raising the platform and engaging the maintenance prop.

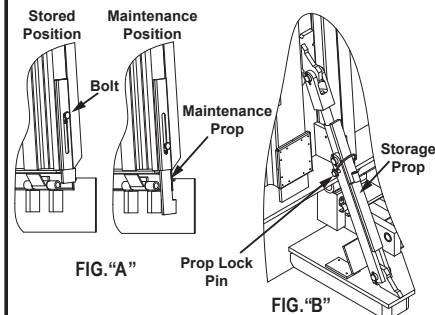
Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before maintenance is complete.

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

! DANGER

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL props have been properly positioned and secured. First, back out bolt to position side maintenance prop(s) as shown in figure "A" below. Then position storage prop and secure with prop lock pin as shown in figure "B" below. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.



1751-1293

Adjust Main Pressure Relief

Main Pressure Relief Adjustment

Note: The main pressure relief (**D**) may need to be *increased* if the platform does not rise or rises slowly and the system operates in pressure relief mode.

The main pressure relief (**D**) may need to be *decreased* if the pump motor loads down when platform reaches the full raised position. See **Figure 33**.

See Troubleshooting section on pages 32-35 for more information.

1. Put the dock leveler in the stored position with the lip folded.
2. Turn OFF all electrical power to the leveler.
3. Lock out and tag out the dock leveler, then place the maintenance props in their service/down position with hardware fully tightened by wrench, and ensure the storage prop is locked out with the prop pin and clip.
4. Loosen jam nut (**E**).
5. Adjust adjusting screw (**F**) as follows:
 - To increase pressure relief, turn adjusting screw clockwise (1/4 turn increments recommended.)
 - To decrease pressure relief, turn adjusting screw counterclockwise (1/4 turn increments recommended.)
6. While holding the adjusting screw, tighten jam nut.
7. Raise the maintenance props to the stored position and tighten all hardware, then remove prop pin and clip.
8. Remove lock out/tag out devices and turn ON electrical power to the leveler.
9. Test leveler and repeat steps 1– 8 as necessary.

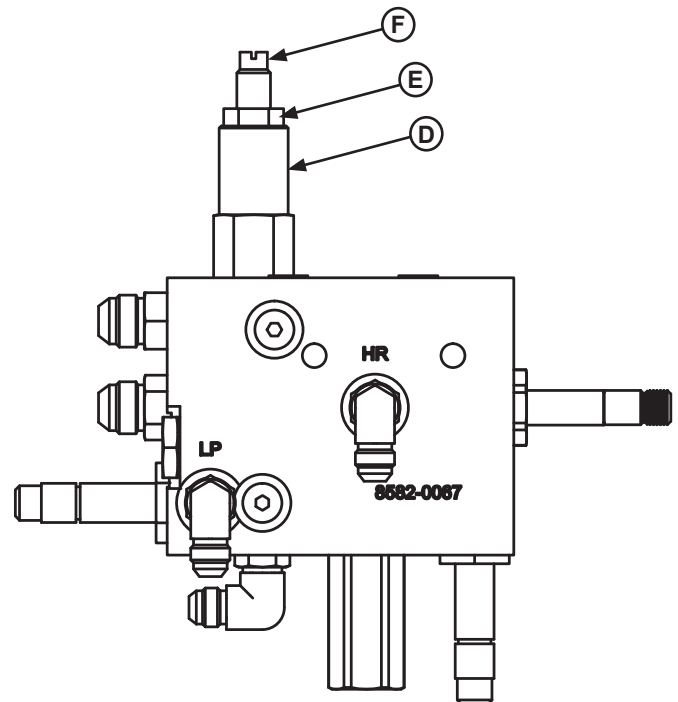


Figure 33

D — Pressure Relief Valve **F** — Adjusting Screw
E — Jam Nut

ADJUSTMENTS

Adjust Stored Limit Switch & Down Speed Flow Control

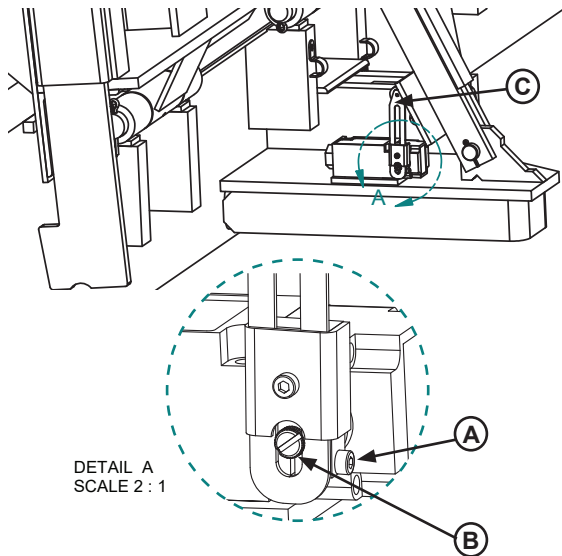


Figure 34

A — Set Screw C — Roller Arm
B — Adjustment Screw

Stored Limit Switch Adjustment

Note: The dock leveler should lean towards the door by the following amount when in the stored position:

- 5' and 6' levelers: **5 degrees from vertical**
- 8' levelers: **10 degrees from vertical**

To change the angle, adjust the Stored Limit Switch:

1. Put the dock leveler in the stored position with the lip folded.
2. Turn OFF all electrical power to the leveler. Lock out and tag out the dock leveler, then ensure the storage prop is locked with the prop pin and clip.
3. Loosen set screw (A) on switch arm. See **Figure 34**.
4. With roller arm (C) contacting storage prop, rotate adjustment screw (B) counter clockwise with a screwdriver, until a “click” noise is heard. This will close the switch contact while the roller is contacting the prop.
5. While holding adjustment screw (B), tighten set screw (A) on switch arm.
6. Remove storage prop pin and clip.
7. Remove lock out/tag out devices and turn ON electrical power to the leveler. Ensure maintenance bars are in the up position.
8. Test leveler and repeat steps 1– 8 as necessary.
9. Once correct angle has been set, check storage prop for play and adjust if needed (see page 31).

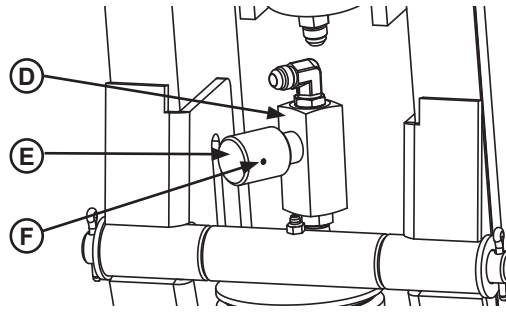


Figure 35

D — Flow Control Valve F — Set Screw
E — Adjusting Knob

Down Speed Flow Control Adjustment

Note: The down speed flow control is factory set. If original setting is lost, or if the dock leveler lowers too rapidly or too slowly, the flow control valve (D) requires adjustment.

When properly adjusted, the dock leveler will take 15-20 seconds to descend from stored to full below dock position. To adjust the flow control:

1. Put the dock leveler in the stored position with the lip folded.
 2. Turn OFF all electrical power to the leveler.
 3. Lock out and tag out the dock leveler, then ensure the storage prop is locked with the prop pin and clip.
 4. Loosen the allen head set screw (F). See **Figure 35**.
 5. Set adjusting knob (E) as follows:
 - To decrease the lowering speed, adjust knob (E) clockwise. (1/8 turn increments recommended.)
 - To increase the lowering speed, adjust knob (E) counterclockwise. (1/8 turn increments recommended.)
 6. Once ideal down speed flow control setting is achieved, lock the adjustment in place by tightening the hex screw (F) on the adjustment knob.
- Note:** Do not overtighten the set screw.
7. Remove prop pin and clip.
 8. Remove lock out/tag out devices and turn ON electrical power to the leveler.
 9. Test leveler and repeat steps 1– 8 as necessary.

Adjust Storage Prop

Storage Prop Adjustment

Note: When set properly, the storage prop will have approximately 1/2" to 1" of play (**G**) with the leveler in the stored position. See **Figure 36**.

Too little or too much play can cause damage to the storage prop and create a safety hazard.

To adjust the storage prop:

1. Put the dock leveler in the stored position.
2. Turn OFF all electrical power to the leveler.
3. Lock out and tag out the dock leveler, then place the maintenance props in their service/down position with hardware tightened by wrench.
4. Remove the cotter pin holding the upper storage prop clevis pin (**H**) in place, then remove the clevis pin from the storage prop yoke (**J**).
5. Adjust the yoke (**J**) on the storage prop until the prop has between 1/2" (minimum) and 1" (maximum) of play with the yoke connected to the platform. See **Figure 36**.

Note: When the storage prop is correctly adjusted, approximately 1-1/2 threads should be exposed through the prop yoke (**J**).

6. Replace the upper storage prop clevis pin and reinstall the cotter pin.
7. Raise the maintenance props to the stored position and tighten all hardware.
8. Remove lock out/tag out devices and turn ON electrical power to the leveler.
9. Test leveler and repeat steps 1– 7 as necessary.

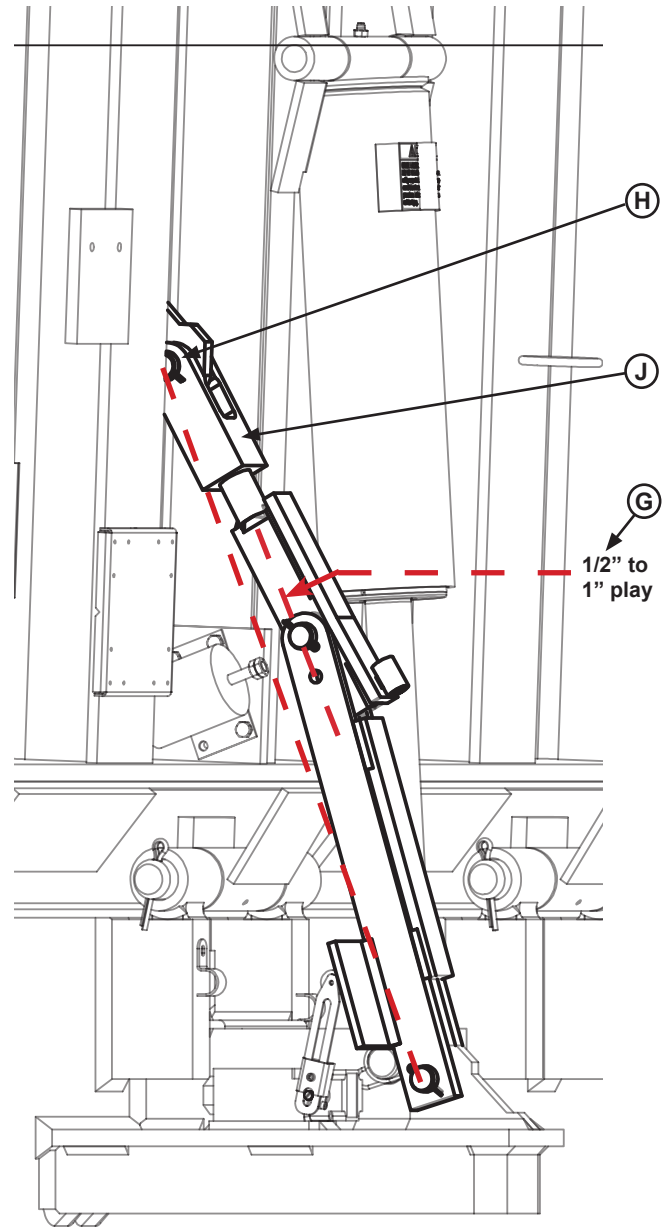


Figure 36

G — Approx. 1/2"-1" play **J** — Prop Yoke
H — Prop Clevis Pin

TROUBLESHOOTING

! DANGER

It is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

! WARNING

When service under the dock leveler is required, always lock all electrical disconnects in the OFF position after raising the platform and engaging the maintenance prop.

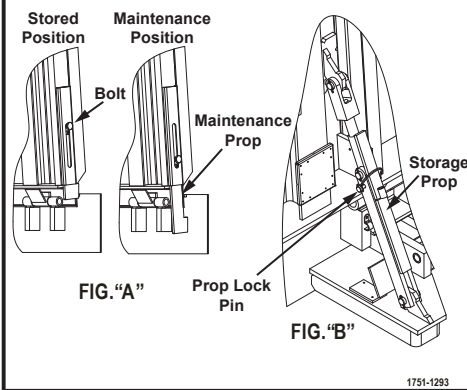
Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before maintenance is complete.

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

! DANGER

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL props have been properly positioned and secured. First, back out bolt to position side maintenance prop(s) as shown in figure "A" below. Then position storage prop and secure with prop lock pin as shown in figure "B" below. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.



Before performing the detailed troubleshooting procedures, check the following items first:

- Check all fuses inside the control panel(s). Replace any blown fuse(s) with a fuse of equal specification.
- Make sure the correct voltages are present at the proper locations inside the control panel(s).

Symptom	Possible Cause	Solution
Platform does not rise or lower. Motor does not energize.	Motor overload device tripped.	Reset overload relay or breaker. Determine cause of device tripping.
	Motor starter (three-phase) or motor relay (single-phase) not energizing.	<p>Check voltage at starter or relay coil.</p> <ul style="list-style-type: none"> • If voltage is present and starter or relay does not energize, replace starter or relay. • If voltage is not present, check all components in series with the starter or relay coil.

TROUBLESHOOTING

Symptom	Possible Cause	Solution
<p><u>Three-phase units only:</u> Platform does not rise or lower. Motor hums, but does not run.</p>	<p>No voltage is present on one line.</p> <p>Note: A motor that is missing voltage on one line is said to be single-phased.</p>	<p>Check for blown fuses at branch circuit disconnect. Replace fuse. Determine cause of blown fuse.</p>
		<p>Check motor starter as follows:</p> <ol style="list-style-type: none"> 1. Disconnect wires at load side of starter. 2. Energize the starter. 3. Measure line-to-line voltage at line side of starter. 4. Measure line-to-line voltage at load side of starter. 5. Line-side and load-side voltages should be approximately the same. Replace starter if voltage values are considerably different from one another.
		<p>Check all wiring to motor for high resistance or no connection.</p>
<p><u>Three-phase units only:</u> Platform does not rise or lower. Motor runs in reverse.</p>	<p>Phase reversed.</p>	<p>Reverse any two legs at the branch circuit disconnect.</p>
<p><u>Single-phase units only:</u> Platform does not rise or lower. Motor energizes, but does not run.</p>	<p>Line voltage too low.</p>	<p>Check wiring to motor for high resistance. Check for loose or corroded connections. Check if gauge of wires to motor are of correct size and specification for load requirement. Replace if necessary.</p>
	<p>Faulty motor centrifugal switch.</p>	<p>Replace motor.</p>
	<p>Faulty motor capacitor.</p>	<p>Replace motor.</p>

TROUBLESHOOTING

Symptom	Possible Cause	Solution
Platform does not rise. Pump operates in pressure relief mode.	Heavy object(s) on platform.	Remove object(s) from platform. Note: For safety reasons, the dock leveler is designed to lift only the platform's own weight.
	Dock leveler binds.	Check for visible obstructions that could cause binding. Remove obstructions. If no obstructions found, contact Systems, LLC Technical Services.
	Pressure relief set too low.	Increase pressure relief. See page 29 for instruction. Note: The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i>
Platform rises slowly.	Low hydraulic fluid.	Add hydraulic fluid, see pages 26-27 for proper fluid level and type.
	Contaminated hydraulic system.	Clean and inspect valves. Flush contaminated oil from hydraulic system. Fill system with new oil; see pages 26-27 for proper fluid level and type.
	Damage or blocked hydraulic hose(s) and/or valve(s).	Replace damaged hose(s). Check and remove blockage from hose(s) and/or valve(s).
	Pressure relief set too low.	Increase pressure relief. See page 29 for instruction. Note: The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i>
Pump motor loads down when platform starts to raise from the lowered position.	Pressure relief set too high.	Decrease pressure relief. See page 29 for instruction. Note: The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i>

TROUBLESHOOTING

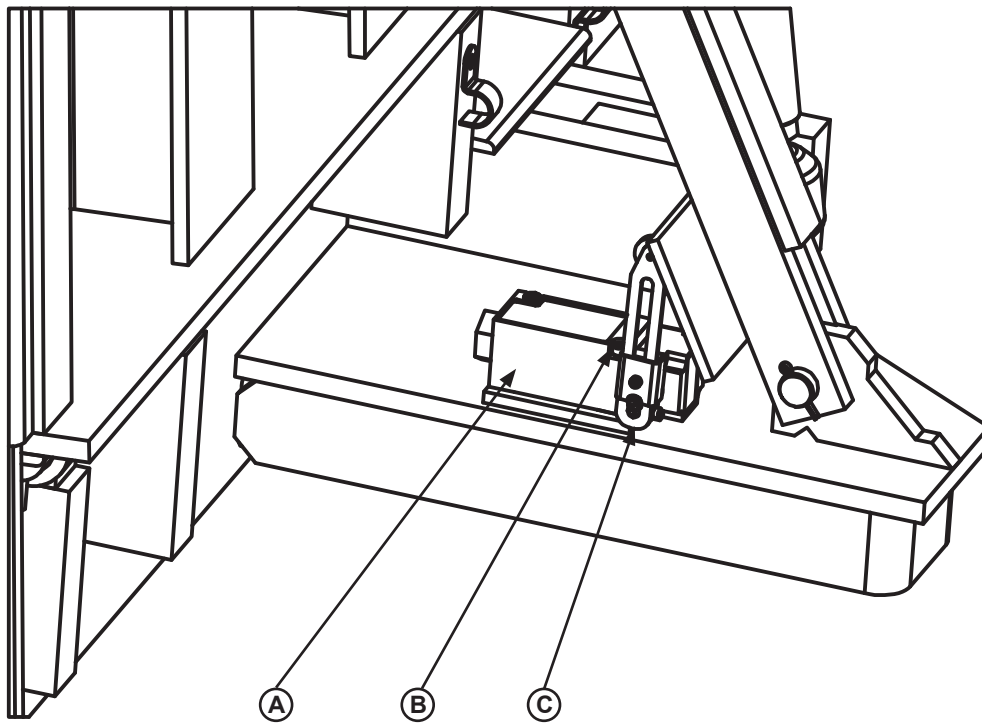
Symptom	Possible Cause	Solution
Platform does not rise to full height.	Low hydraulic fluid.	Add hydraulic fluid, see pages 26-27 for proper fluid level and type.
	Incorrect limit switch adjustment.	Limit switch faulty or set incorrectly. See page 30 for adjustment instructions.
Platform does not rise.	Faulty spool valve.	Remove and clean spool valve, or replace with new valve.
	Air in hydraulic system.	Perform purge procedure on pages 18-19.
Lip does not extend.	“Lip” coil not energized.	Check power to the solenoid coil; coil should have a magnetic pull when energized.
	Faulty spool valve.	Remove and clean spool valve, or replace with new valve.
Lip does not lower.	“Lip” and “Lower” coils not energized.	Check power to the solenoid coils; coil should have a magnetic pull when energized.
	Faulty spool valve.	Remove and clean spool valve, or replace with new valve.
Platform does not lower. Pump does not run.	Blue “Leveler Stored” light not on.	Limit switch faulty or set incorrectly. See page 30 for adjustment instructions.
Platform does not lower. Pump runs.	Faulty prop kicker solenoid.	Check field wiring to prop kicker solenoid. If wiring is intact, replace prop kicker solenoid.
Platform does not lower. Pump runs and prop kicker solenoid activates.	“Lower” coils not energized.	Check power to the solenoid coil; coil should have a magnetic pull when energized.
	Faulty spool valve.	Remove and clean spool valve, or replace with new valve.
Platform does not lower. Pump runs and prop kicker activates.	Incorrect storage prop adjustment.	Adjust storage prop. See page 31 for adjustment instructions.
	Faulty or incorrectly set bump-back timer in control box.	Contact Systems, LLC Technical Services for adjustment instructions.

If additional troubleshooting assistance is required, contact Systems, LLC
Technical Services with equipment serial number or customer order number (CO#).

Technical Service at 800-643-5424 or techservices@loadingdocksystems.com

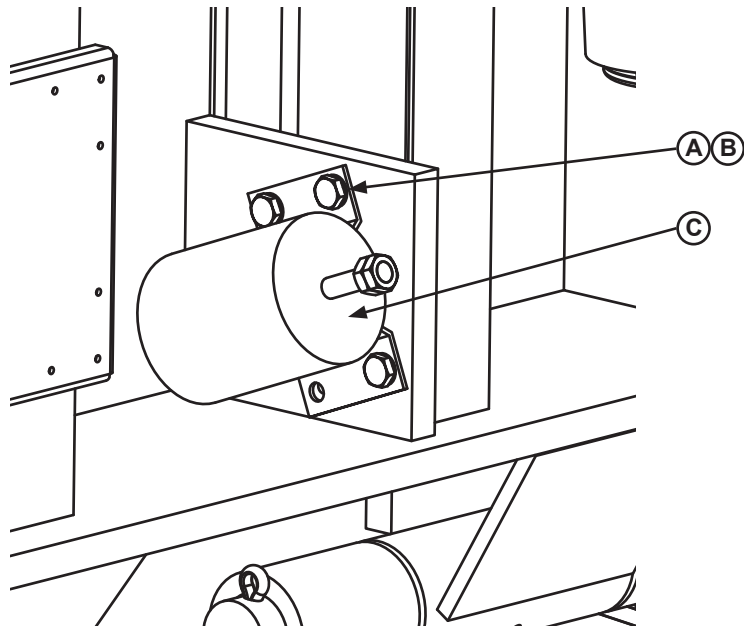
PARTS

Stored Limit Switch



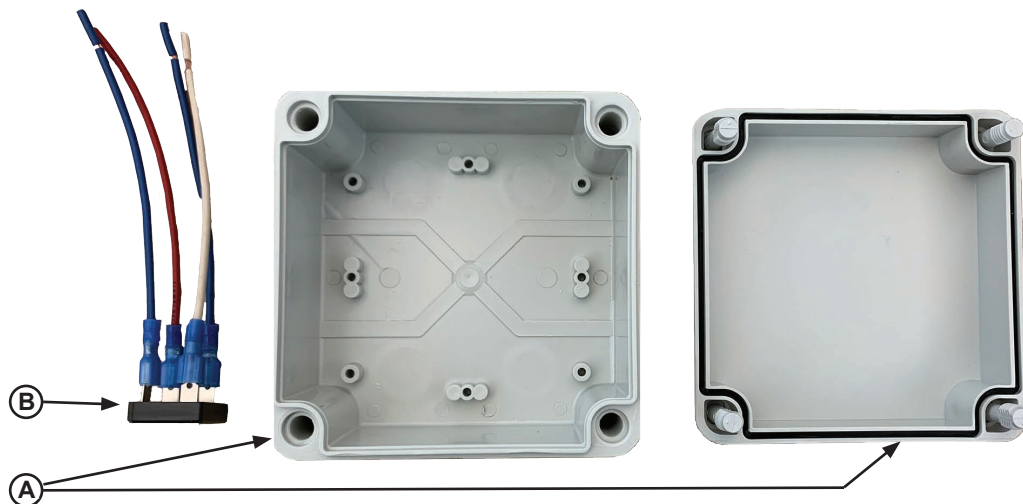
Item	Quantity	Part Number	Description
A	1	0961-0666	Limit Switch
B	2	2101-0390	Screw #10-32 UNF x 1.75 Lg
C	1	0961-0667	Arm, Limit Switch

Prop Kicker Solenoid



Item	Quantity	Part Number	Description
A	3	2101-0153	Bolt 1/4 UNC 1/2 Lg.
B	3	2101-0005	Washer, Lock 1/4
C	1	8581-0189	Solenoid, Prop Kicker

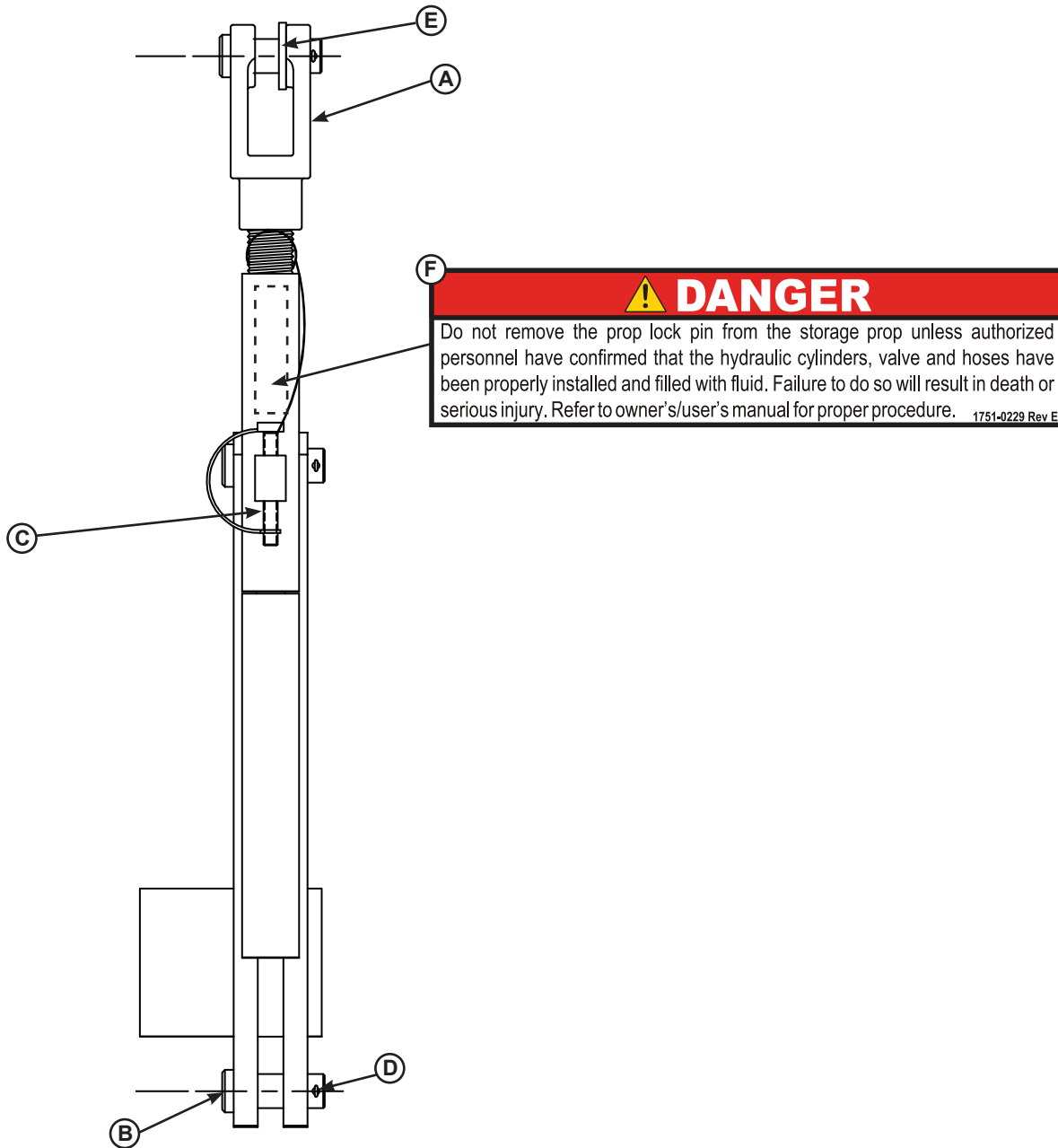
J-Box



Item	Quantity	Part Number	Description
A	1	2751-0042	J Box Fiber Glass 5" x 5" (Includes Cover)
B	1	3054-0007	Rectifier, Bridge Assembly, 15A, 560V

PARTS

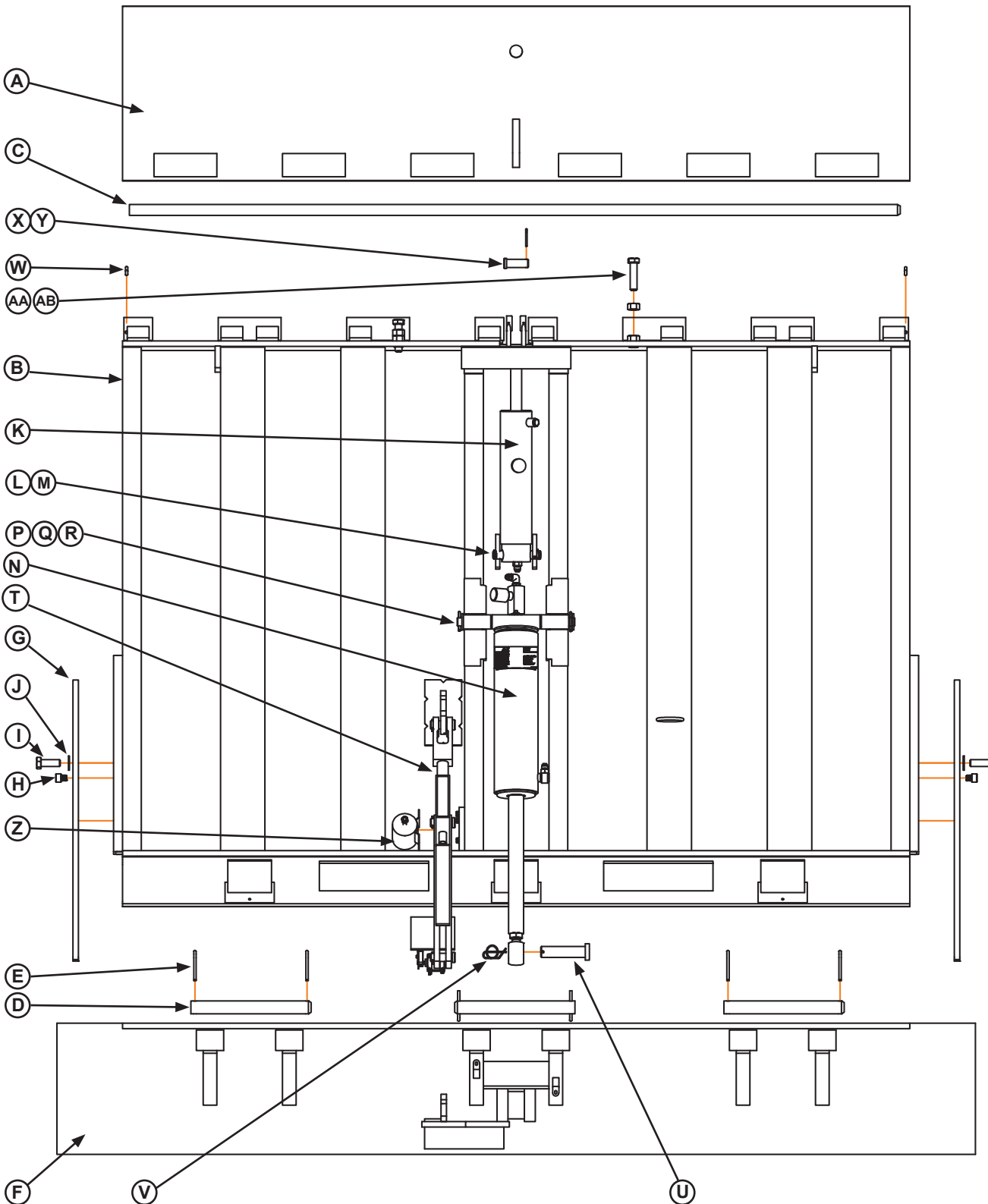
Storage Prop Assembly



Item	Quantity	Part Number	Description
*	*	9226-0001	Storage Prop Assembly, Complete
A	1	9222-0097	Yoke, Upper Arm Prop
B	3	0522-0005	Clevis Pin 3/4 Dia x 2 Lg.
C	1	9201-0006	Prop Lock Pin and Clip
D	3	2101-0045	Cotter Pin
E	1	2101-0093	Washer, Flat
F	1	1751-0229	Precautionary Decal

PARTS

Lip and Platform Components



Lip and Platform Components

NOTICE

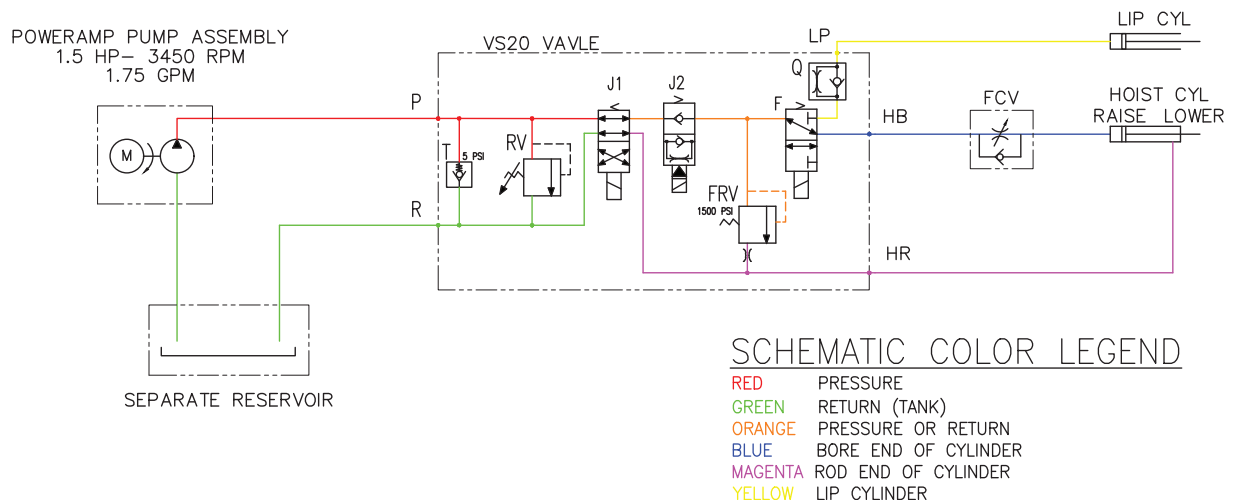
Sliding maintenance props introduced in May 2019 are not backwards-compatible. Refer to Mar. 2019 manual or contact Technical Services for earlier folding maintenance prop parts.

Item	Quantity	Part Number	Description
A	1	0595-____*	Lip Weldment*
B	1	9515-____*	Platform, Welded Assembly*
C	1	9202-0050	Pin, Lip Hinge 6'W
		9202-0051	Pin, Lip Hinge 6.5'W
		9202-0052	Pin, Lip Hinge 7'W
		9202-0053	Pin, Lip Hinge 6'W, Stainless (optional)
		9202-0054	Pin, Lip Hinge 6.5'W, Stainless (optional)
D	3	9202-0055	Pin, Lip Hinge 7'W, Stainless (optional)
		9202-0002	Rear Hinge Pin
		9202-0041	Rear Hinge Pin, Stainless(optional)
E	6	2101-0247	Cotter Pin, 1/4 x 2.00
F	1	7953-____*	Embed*
G	2	9511-0042*	Maintenance Bar, VS, Sliding
H	2	2101-0139*	Screw, SHCS, 1/2-13 UNC x 1/2
I	2	2101-0262*	Screw, HHCS, 5/8-11 x 1.75
J	2	2101-0004	Washer, Flat, 5/8"
K	1	0526-0016	Lip Cylinder, VS, Cushion Lip (w/fittings)
L	1	9202-0004	Pin - Lip Cyl. 3/4 Dia. x 4-3/8 Lg.
M	2	2101-0049	Hairpin Clip
N	1	0525-0132*	Hoist Cylinder, Complete Assy (8' Platforms w/12" Pit)*
		0525-0133*	Hoist Cylinder, Complete Assy (8' Platforms w/15" Pit)*
		0525-0134*	Hoist Cylinder, Complete Assy (5' & 6' Platforms)*
P	1	9202-0072	Pin, Platform, Hoist, VS3/RR/CA, 49/64 Dia. x 10.75, SW85
Q	2	2101-0093	Washer, Flat, 3/4
R	2	2101-0357	Cotter Pin, 3/16 x 1.25
T	1	9226-0001	Storage Prop
U	1	9202-0073	Hoist Cyl Pin Rod End
V	1	2101-0386	Ring Clip, Rue
W	2	2101-0046	Cotter Pin, 1/4 x 1.25
X	1	0522-0005	Clevis Pin
Y	1	2101-0045	Cotter Pin, 1/8 x 1
Z	1	8581-0189	Solenoid, Prop Kicker
AA	2	2101-0042	Nut, Hex, 5/8-11, UNC, Zinc
AB	2	2101-0052	Screw, HHCS, 5/8-11 UNC x 2.50, Grade 5, Zinc

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

Self-Contained VS Hydraulic Components

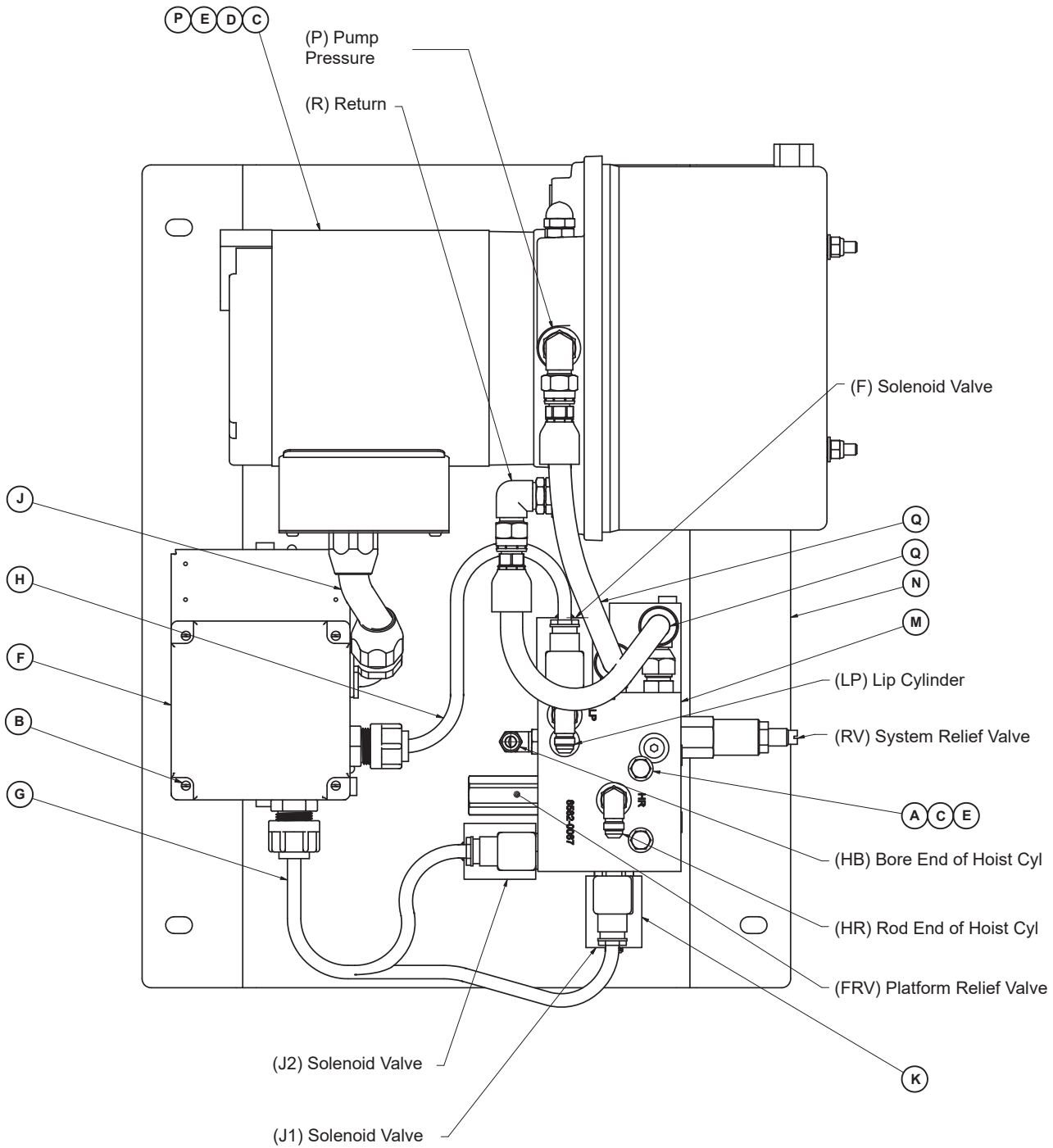
Item	Quantity	Part Number	Description
A	1	0526-0016	Lip Cylinder, VS (w/fittings)
B	1	0525-0132*	Hoist Cylinder, Complete Assy (8' Platforms w/10" or 12" Pit)*
		0525-0133*	Hoist Cylinder, Complete Assy (8' Platforms w/15" Pit)*
		0525-0134*	Hoist Cylinder, Complete Assy (5' & 6' Platforms)*
C	1	9301-0299	Breather, Reservoir
D	1	9391-0098	Reservoir, VS, Platform Mounted
E	4	2101-0009	Screw, HHCS, 5/16-18 UNC x .75, Grade 5
F	4	2101-0058	Washer, Lock, 5/16
G	4	2101-0060	Washer, Flat, 3/8
H	1	9394-0014	Motor Assembly, 115V 1-Phase
		9394-0015	Motor Assembly, 460V 3-Phase
		9394-0033	Motor Assembly, 208V 1-Phase
		9394-0034	Motor Assembly, 230V 1-Phase
		9394-0035	Motor Assembly, 575V 3-Phase
		9394-0043	Motor Assembly, 208V 3-Phase
		9394-0044	Motor Assembly, 230V 3-Phase
I	1	9301-0268	Pump 1.75GPM
L	1	9904-0090	Hyd Hose, 17.50" Lg, #8 JIC Swivel Both Ends, (8' Levelers)
M	1	9904-0059	Hyd Hose, 3/8" x 35.00" Lg, #6 Swivel Both Ends, (5'-6' Levelers)
		9904-0137	Hyd Hose, 3/8" x 60.00" Lg, #6 JIC Swivel Both Ends 8'Lg
N	1	9904-0293	Hyd Hose, 8.00" Lg, #8 ORB to #8 JIC Swivel
P	2	9904-0083	Hyd Hose, 44.00 Lg, #6 JIC Swivel Both Ends, (5'/6' Levelers)
		9904-0137	Hyd Hose, 3/8" x 60.00" Lg, #6 JIC Swivel Both Ends, (8' Levelers)
Q	1	9904-0292	Hyd Hose, 13.50" Lg, #8 ORB to #8 JIC Swivel
R	1	9301-0116	Fitting 90 Deg #8 ORB To #8 JIC
S	1	8585-0104	Vertical Valve Assembly (See Page 52)



*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

Remote Mounted PPAC VS Hydraulic Components

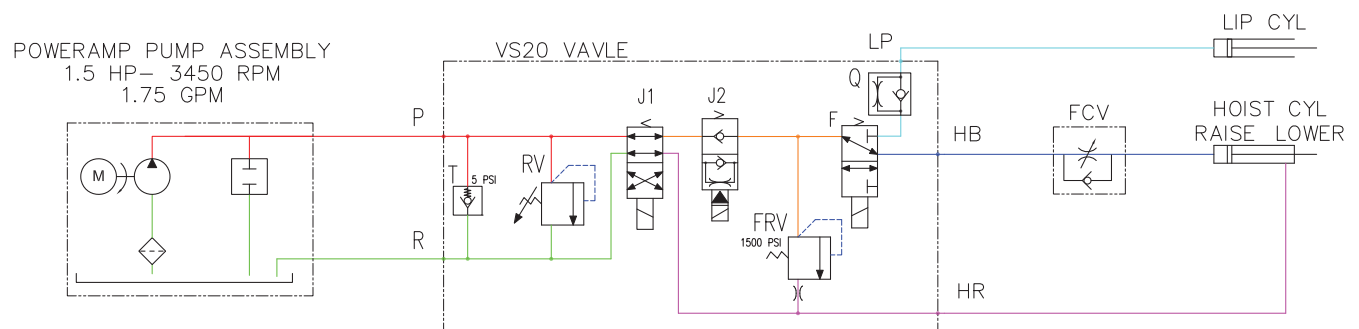


Remote Mounted PPAC VS Hydraulic Components

Item	Quantity	Part Number	Description
*	1	9396-0051	PPAC ASSY, VS, REM Mount, RV Float
A	2	2101-0077	Screw, HHCS, 5/16-18 UNC X 3
B	4	2101-0102	Screw, RHMS, 8-32 UNC X 3/4
C	6	2101-0163	Washer - Flat - Zinc Plated, 5/16" DIA
D	4	2101-0187	Screw, HHCS - Grade 5, 5/16-18 UNC X 1
E	6	2101-0214	Nut, Flng Top L/N, 5/16-18
F	1	2751-0042	J-Box - Fiberglass, 5 X 5 X 3
G	1	4305-0264	Cable Assy,24"OAL,2 Coil,
H	1	4305-0306	Cable Assy,24"OAL,1 Coil
J	1	4305-0601	Conduit Assy,4.5"OAL,3,90-90 (115V - 1PH)
		4305-0602	Conduit Assy,4.5"OAL,4,90-90 (208V, 230V, 460V - 3PH)
		4305-0603	Conduit Assy,4.5"OAL,3,90-90 (208V, 230V - 1PH)
K	3	8581-0004	Delta Coil, 115VAC,DHC-11 (includes jam nut)
M	1	8585-0103	Valve Assy,VS/RR,RV Float (See Page 53)
N	1	9394-0049	PPAC MTG WLDT, VS Remote W/ Valve
P	1	9395-0351	PPAC,REM,WALL,2GPM,2.1 GAL, 1PH,115/230V,1.5HP
		9395-0352	PPAC,REM,WALL,2GPM,2.1 GAL, 1PH,115/230V,1.5HP,WASHDOWN
		9395-0353	PPAC,REM,WALL,2GPM,2.1 GAL, 1PH,208V,1.5HP
		9395-0354	PPAC,REM,WALL,2GPM,2.1 GAL, 1PH,208V,1.5HP,WASHDOWN
		9395-0355	PPAC,REM,WALL,2GPM,2.1 GAL, 3PH,460V,1.5HP
		9395-0356	PPAC,REM,WALL,2GPM,2.1 GAL, 3PH,460V,1.5HP,WASHDOWN
		9395-0357	PPAC,REM,WALL,2GPM,2.1 GAL, 3PH,575V,1.5HP
Q	2	9904-0090	Hyd Hose,3/8", 17.50 LG, #8 JICF Swivel Both Ends

SCHEMATIC COLOR LEGEND

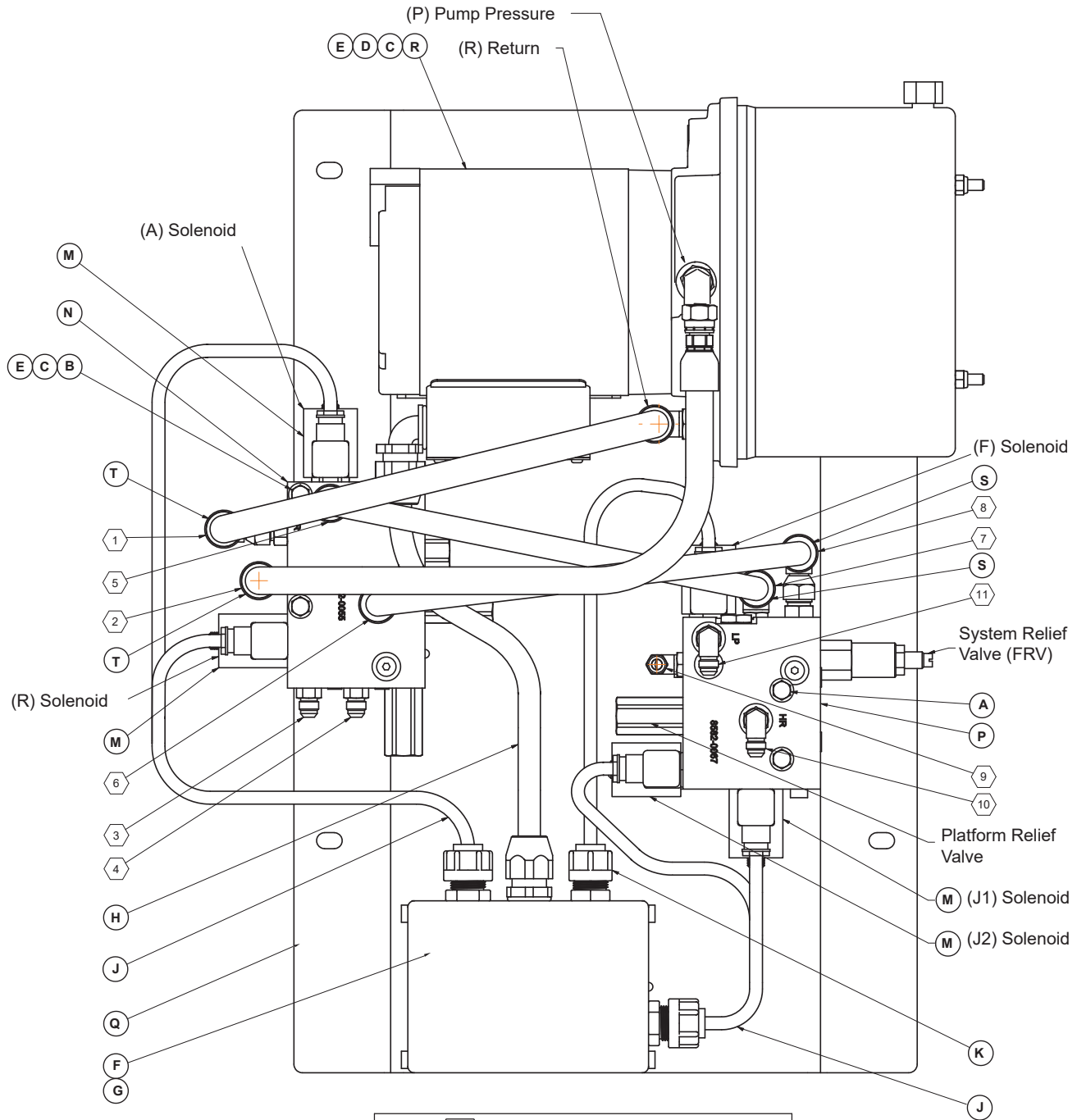
RED	PRESSURE
GREEN	RETURN (TANK)
ORANGE	PRESSURE OR RETURN
BLUE	BORE END OF CYLINDER
MAGENTA	ROD END OF CYLINDER
CYAN	LIP CYLINDER



*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

Remote Mounted PPAC—W/ Stop Restraint—VS Hydraulic Components



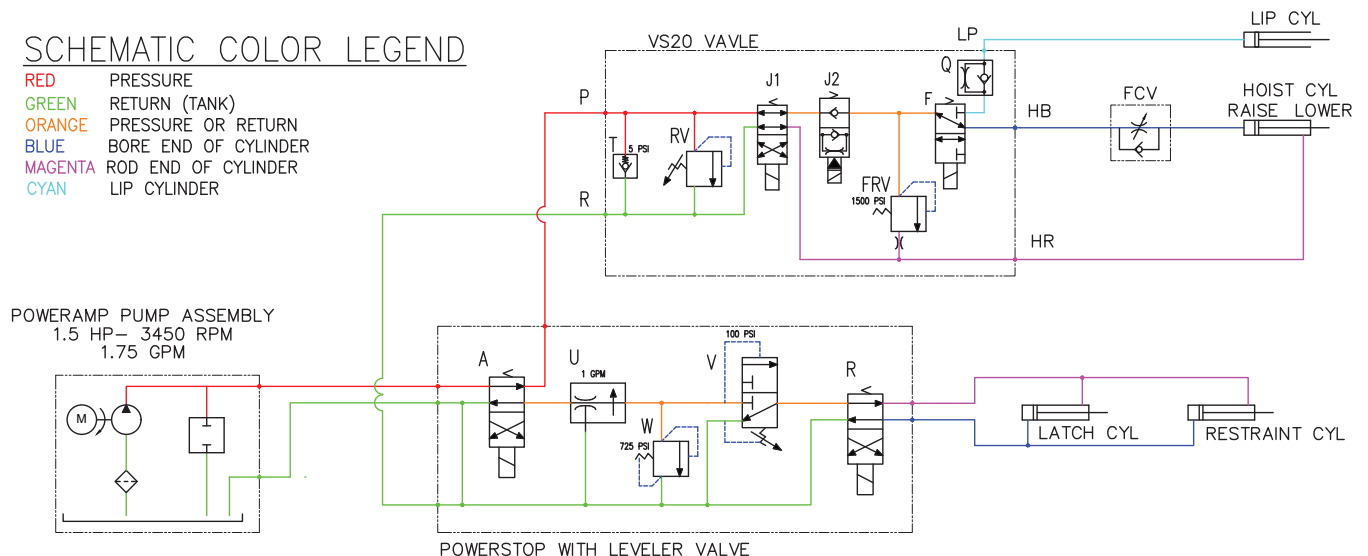
1-11 VALVE ASSEMBLY	
NOTE	DESCRIPTION
1	RETURN TO TANK
2	PRESSURE FROM PUMP
3	TO BORE END OF PSTOP CYLINDERS
4	TO ROD END OF PSTOP CYLINDERS
5	PRESSURE TO VS BLOCK
6	RETURN FROM VS BLOCK
7	PRESSURE FROM PSTOP VALVE
8	RETURN TO PSTOP VALVE
9	TO BASE END OF HOIST CYLINDERS
10	TO ROD END OF HOIST CYLINDERS
11	TO LIP CYLINDER

Remote Mounted PPAC—W/ Stop Restraint—VS Hydraulic Components

Item	Quantity	Part Number	Description
*	1	9396-0052	PPAC ASSY, VS, REM Mount, PSTOP, RV Float
A	2	2101-0014	HHCS - Grade 2, 5/16-18 UNC X 2-1/4
B	2	2101-0077	HHCS, 5/16-18 UNC X 3
C	8	2101-0163	Washer - Flat, 5/16" DIA
D	4	2101-0187	Screw, HHCS - Grade 5, 5/16-18 UNC X 1
E	6	2101-0214	Nut, Flng Top L/N, 5/16-18
F	4	2101-0252	PHMS-Stainless Steel, #6-32 UNC X 5/8
G	1	2751-0080	J-Box - Fiberglass, 5 X 7 X 3
H	1	4305-0232	Conduit Assy, 24" OAL, 4, 90-STR (208V, 230V, 460V - 3PH)
		4305-0241	Conduit Assy, 24" OAL, 3, 90-STR (115V - 1PH)
		4305-0242	Conduit Assy, 24" OAL, 3, 90-STR (208V, 230V - 1PH)
J	2	4305-0264	Cable Assy, 24" OAL, 2 Coil
K	1	4305-0306	Cable Assy, 24" OAL, 1 Coil
M	5	8581-0004	Delta Coil, 115VAC, DHC-11 (includes jam nut)
N	1	8583-0078	Valve Assy, PStop, Remote Mount, With VS (See Restraint Manual.)
P	1	8585-0103	Valve Assy, VS/RR, RV (See Page 53)
Q	1	9394-0049	PPAC MTG WLDT, VS Remote W/ Valve
R	1	9395-0351	PPAC, REM, WALL, 2GPM, 2.1 GAL, 1PH, 115/230V, 1.5HP
		9395-0352	PPAC, REM, WALL, 2GPM, 2.1 GAL, 1PH, 115/230V, 1.5HP, WASHDOWN
		9395-0353	PPAC, REM, WALL, 2GPM, 2.1 GAL, 1PH, 208V, 1.5HP
		9395-0354	PPAC, REM, WALL, 2GPM, 2.1 GAL, 1PH, 208V, 1.5HP, WASHDOWN
		9395-0355	PPAC, REM, WALL, 2GPM, 2.1 GAL, 3PH, 460V, 1.5HP
		9395-0356	PPAC, REM, WALL, 2GPM, 2.1 GAL, 3PH, 460V, 1.5HP, WASHDOWN
		9395-0357	PPAC, REM, WALL, 2GPM, 2.1 GAL, 3PH, 575V, 1.5HP
		9395-0358	PPAC, REM, WALL, 2GPM, 2.1 GAL, 3PH, 575V, 1.5HP, WASHDOWN
S	2	9904-0082	HYD HOSE, 3/8", 21.00 LG, #8 JICF SWIVEL BOTH ENDS
T	2	9904-0106	HYD HOSE, 3/8", 28.00 LG, #8 JICF SWIVEL BOTH ENDS

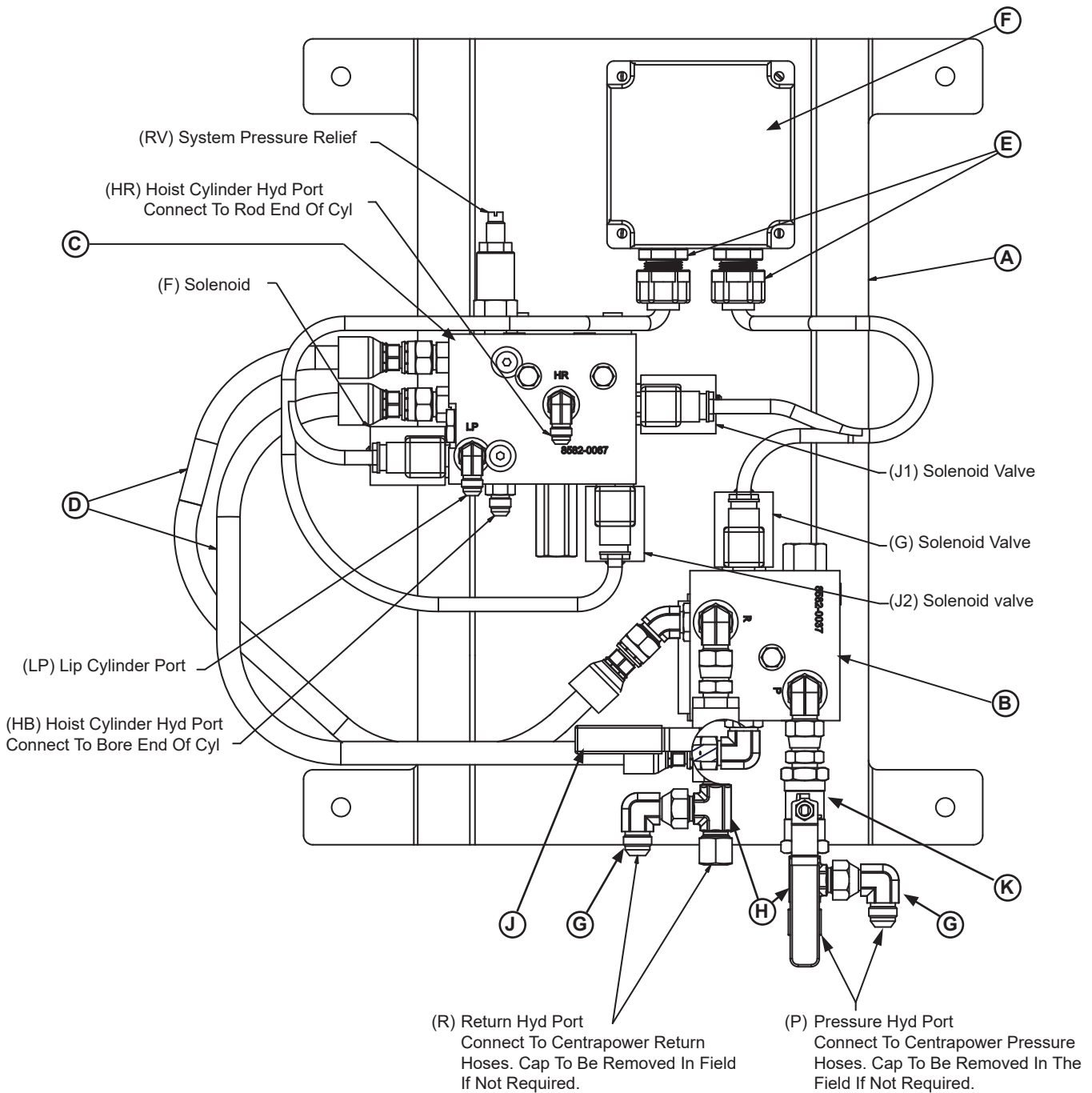
SCHEMATIC COLOR LEGEND

RED	PRESSURE
GREEN	RETURN (TANK)
ORANGE	PRESSURE OR RETURN
BLUE	BORE END OF CYLINDER
MAGENTA	ROD END OF CYLINDER
CYAN	LIP CYLINDER



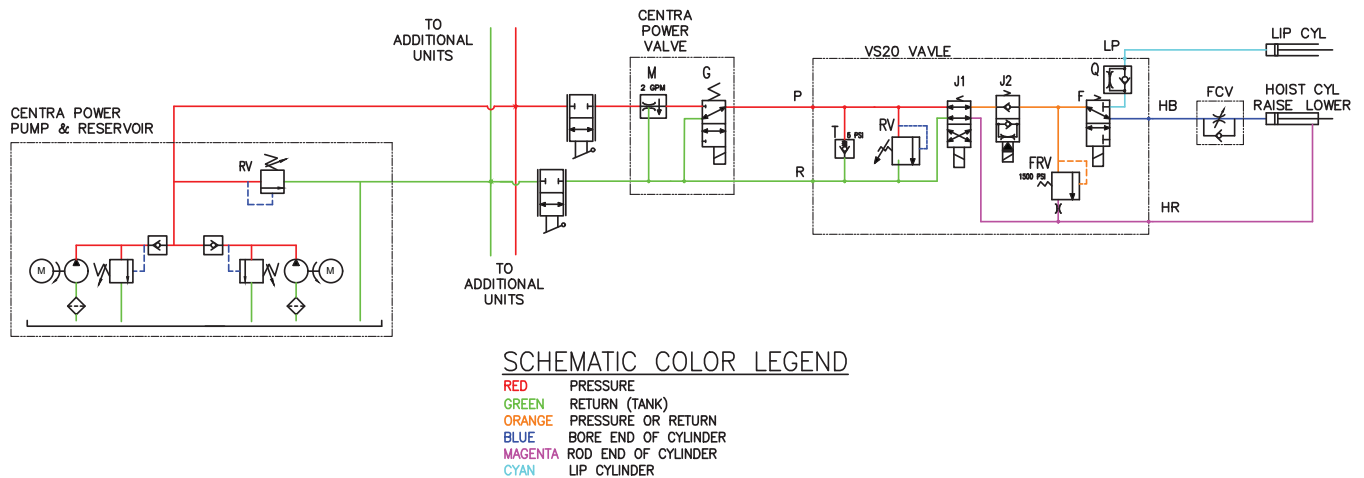
*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

CentraPower—Remote Mounted Manifolds—VS Hydraulic Components



CentraPower—Remote Mounted manifolds—VS Hydraulic Components

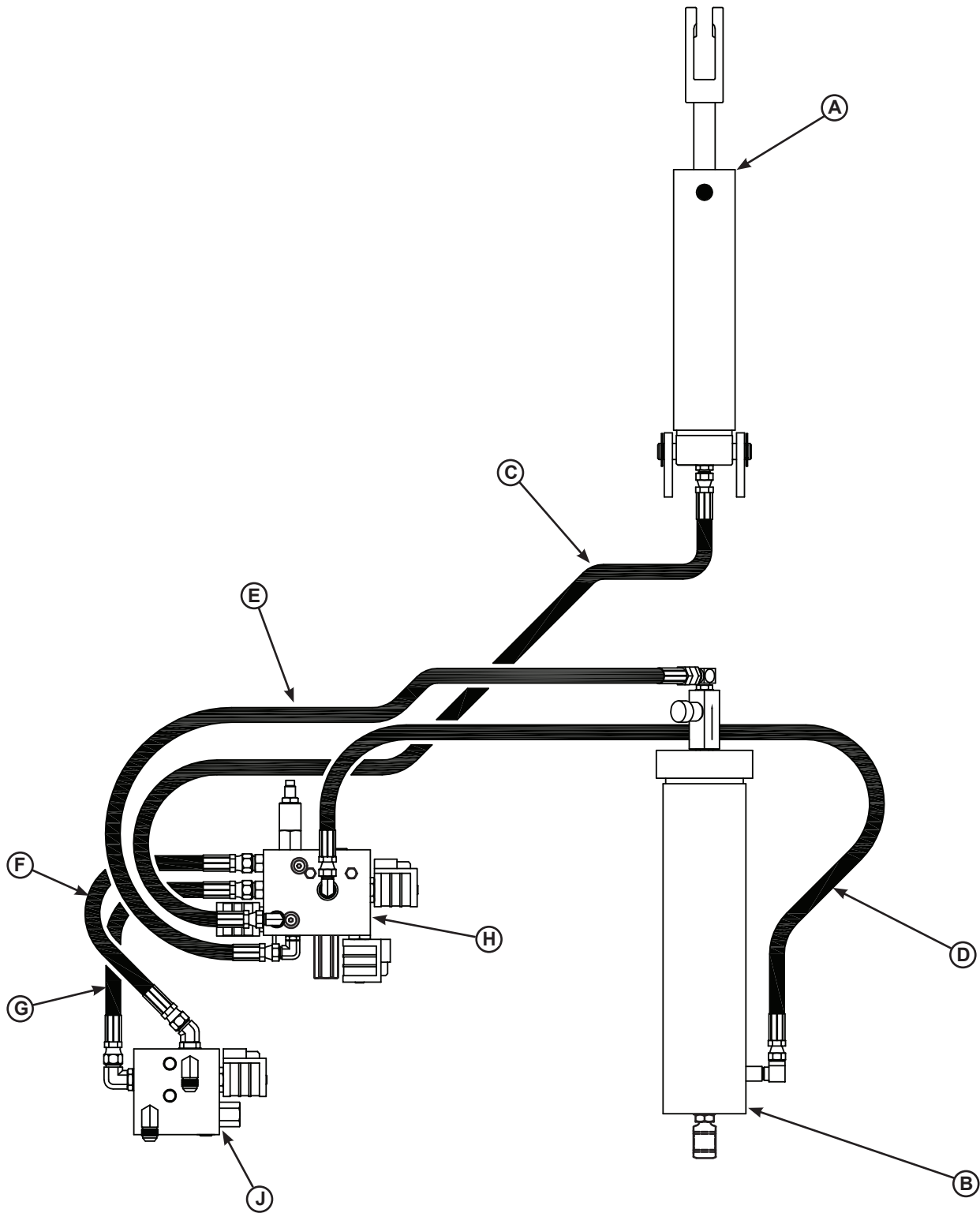
Item	Quantity	Part Number	Description
*	1	8586-0019	Valve ASSY, VS, CP, Remote MTG, RV Float
A	1	9394-0059	Valve MTG WLDT, VS Remote & CP, W J-Box MTG
B	1	8583-0045	Valve ASSY, CentraPower, VS (See Page 55)
C	1	8585-0106	Valve ASSY, VS/RR, RV Float, Remote & CP (See Page 54)
D	2	9904-0100	Hyd Hose, 3/8", 24.00 LG, #8 JICF Swivels
E	2	4305-0264	Cable ASSY, 24" OAL, 2 Coil
F	1	2751-0042	J-Box, Fiberglass, 5 x 5 x 3
G	2	9301-0145	Fitting Elbow - 90 Deg, #8 JICF x #8 JICM
H	2	0521-0122	Fitting, Tee, Run, Male, 3/8 NPT x #8 JICM
J	1	8581-0001	Valve, Ball, Bronze, 3/8 NPT
K	1	8581-0002	Valve, Ball, Steel, 3/8 NPT



*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

CentraPower—VS—Platform Mounted Hydraulic Components



CentraPower—VS—Platform Mounted Hydraulic Components

DANGER

If the hydraulic system is opened to atmosphere anywhere other than the fluid reservoir, air will enter into the hydraulic system. Whenever this happens, air must be fully purged from the hydraulic system. See pages 18-19 for instructions.

Item	Quantity	Part Number	Description
A	1	0526-0016	Lip Cylinder, VS (w/fittings)
B	1	0525-0132*	Hoist Cylinder, Complete Assy (8' Platforms w/12" Pit)*
		0525-0133*	Hoist Cylinder, Complete Assy (8' Platforms w/15" Pit)*
		0525-0134*	Hoist Cylinder, Complete Assy (5' & 6' Platforms)*
C	1	9904-0059	Hyd Hose, 35.00" Lg, #6 JIC Swivel Both Ends (5'-6' LG)
		9904-0137	Hyd Hose, 60.00" Lg, #6 JIC Swivel Both Ends (8' LG)
D	1	9904-0083	Hyd Hose, 44.00" Lg, #6 JIC Swivel Both Ends
E	1	9904-0059	Hyd Hose, 35.00" Lg, #6 JIC Swivel Both Ends
F	1	9904-0082	Hyd Hose, 21.00" Lg, #8 JIC Swivel Both Ends
G	1	9904-0090	Hyd Hose, 17.50" Lg, #8 JIC Swivel Both Ends
H	1	8585-0104	Vertical Valve Assembly (See Page 54)
J	1	8583-0045	CentraPower Valve Assembly (See Page 55)

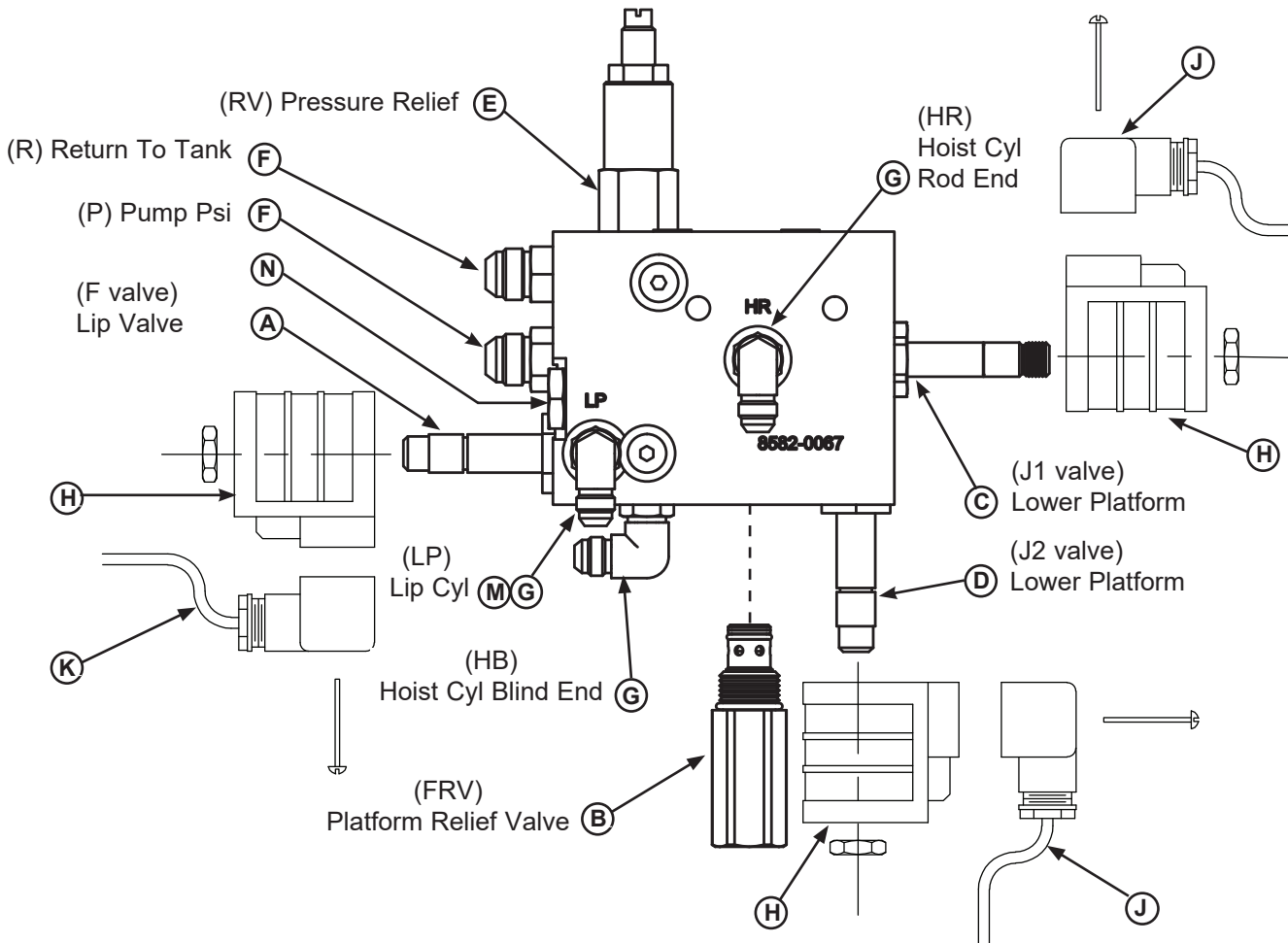
NOTICE

See page 27 for hydraulic fluid checking/filling instructions.

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

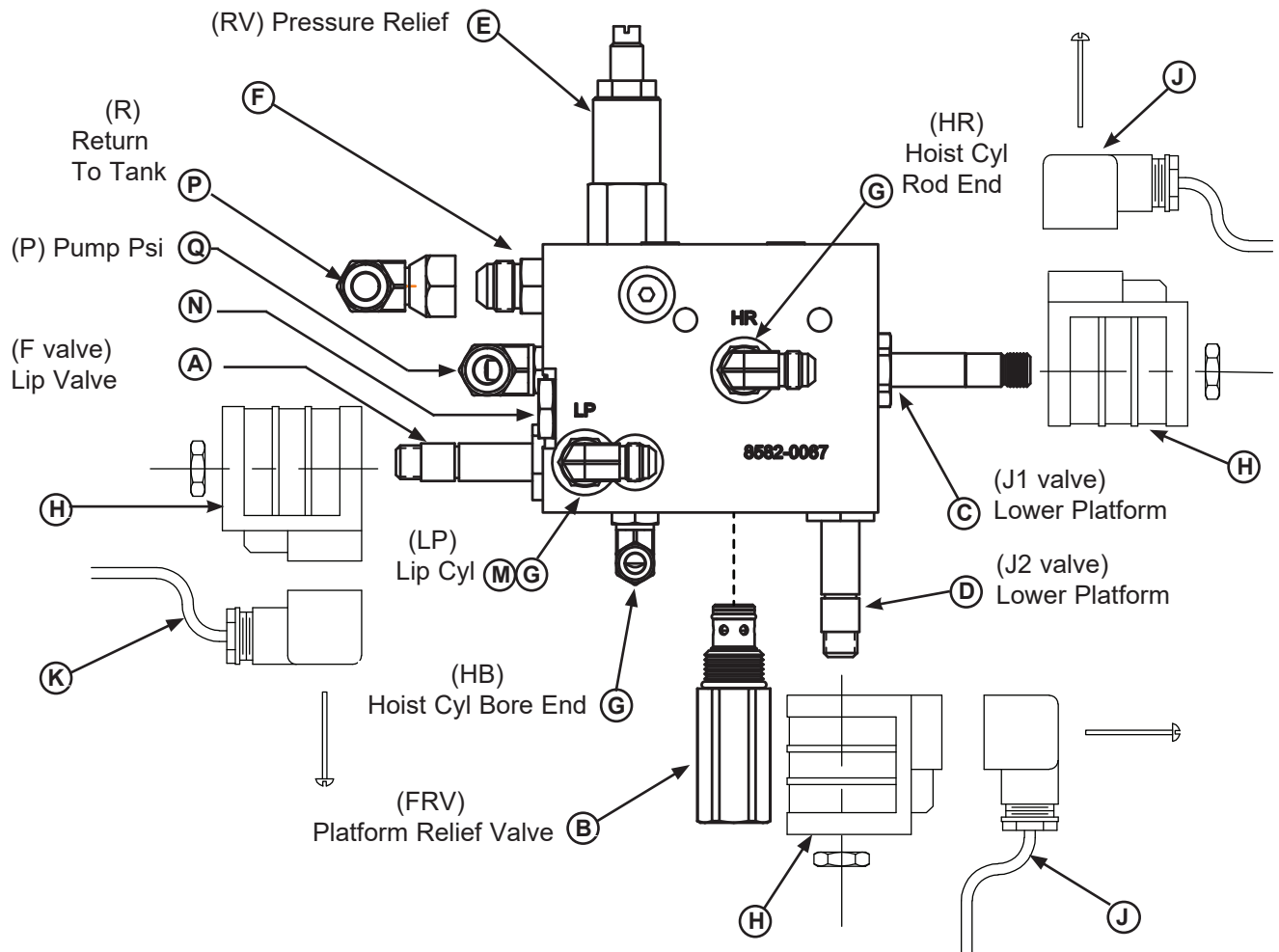
Vertical Valve Block Assembly—Platform Mounted Pump/ Motor



Item	Quantity	Part Number	Description
*	1	8585-0104	Vertical Valve Assembly, Platform Mounted Pump/ Motor (Includes A-G and M-N)
A	1	8581-0005	Valve, Cartridge 3-Way Delta
B	1	8581-0183	Valve, Cartridge, Relief, Diff (Float Valve)
C	1	8581-0011	Valve, Cartridge 4-Way 2 Pos Delta
D	1	8581-0010	Valve, Cartridge 2-Way N.C. Poppet Delta
E	1	8581-0105	Valve, Cartridge Relief
F	2	9301-0111	Fitting #6 ORB X #8 JIC
G	3	9301-0113	Fitting 90 Deg #6 ORB X #6 JIC
H	3	8581-0004	Coil 115V (Includes 1/2 UNF Jam Nut)
J	1	4301-0003	Cable Assy, 24" Lg, Two Coil
K	1	4305-0306	Cable Assy, 24" Lg, One Coil
M	1	8581-0139	Valve, Orifice Check (Lip Flow Control)
N	1	8581-0188	Valve, Cartridge, Check, Poppet

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

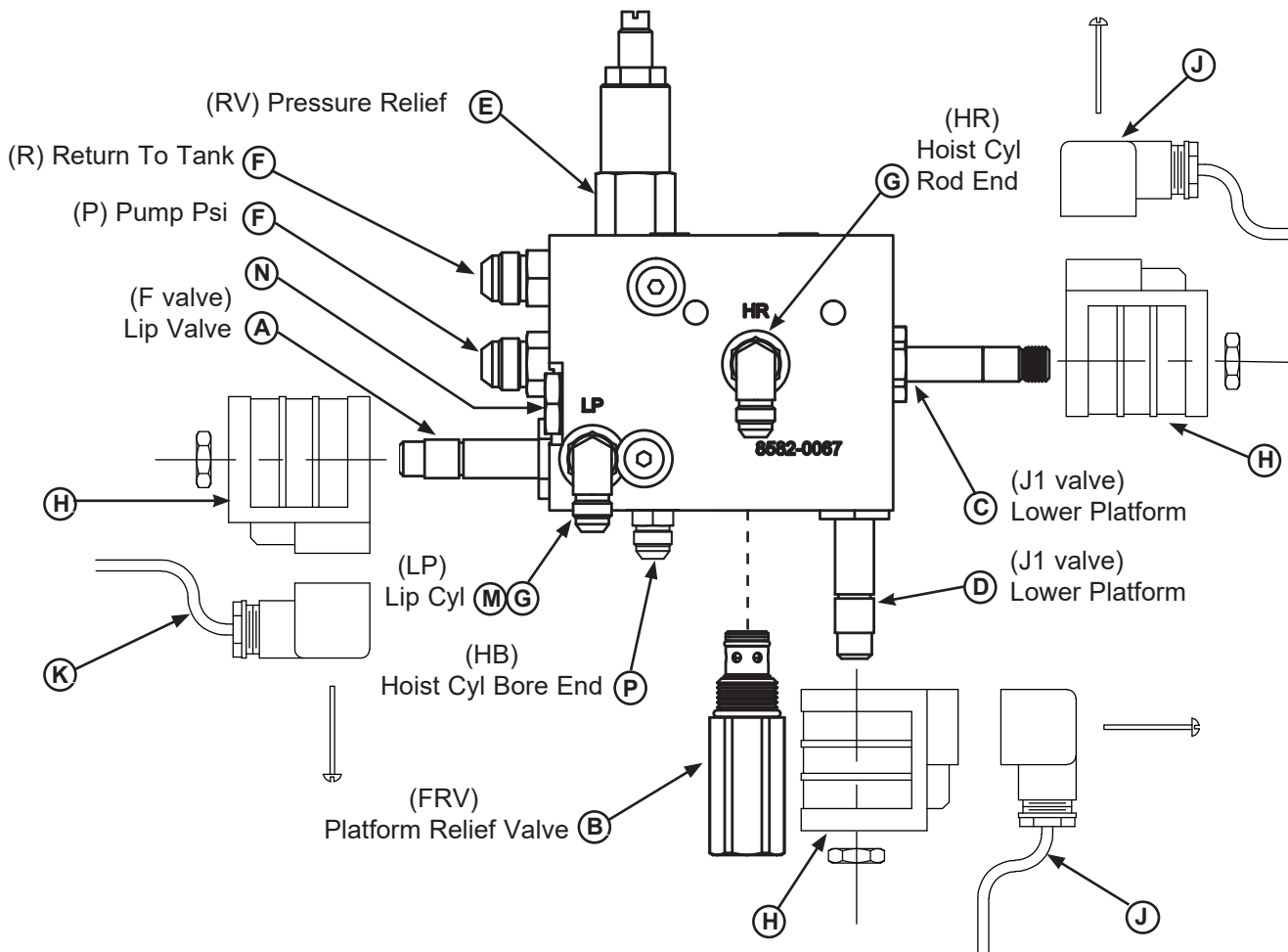
Vertical Valve Block Assembly—Remote Mounted Pump/ Motor



Item	Quantity	Part Number	Description
*	1	8585-0103	Vertical Valve Assembly, VS/ RR, Remote Mounted Pump/ Motor (Includes A-G and K-Q)
A	1	8581-0005	Valve, Cartridge 3-Way Delta
B	1	8581-0183	Valve, Cartridge, Relief, Diff (Float Valve)
C	1	8581-0011	Valve, Cartridge 4-Way 2 Pos Delta
D	1	8581-0010	Valve, Cartridge 2-Way N.C. Poppet Delta
E	1	8581-0105	Valve, Cartridge Relief
F	1	9301-0111	Fitting, #6 ORB X #8 JIC
G	3	9301-0113	Fitting, 90 Deg #6 ORB X #6 JIC
H	3	8581-0004	Coil, 115V (Includes 1/2 UNF Jam Nut)
J	1	4301-0003	Cable Assy, 24" Lg, Two Coil
K	1	4305-0306	Cable Assy, 24" Lg, One Coil
M	1	8581-0139	Orifice Check (Lip Flow Control)
N	1	8581-0188	Valve, Cartridge, Check, Poppet
P	1	9301-0145	Fitting, Elbow - 90 Deg, #8 JIC x #8 JIC
Q	1	9301-0115	Fitting, Elbow - 90 Deg, #6 ORB x #8 JIC

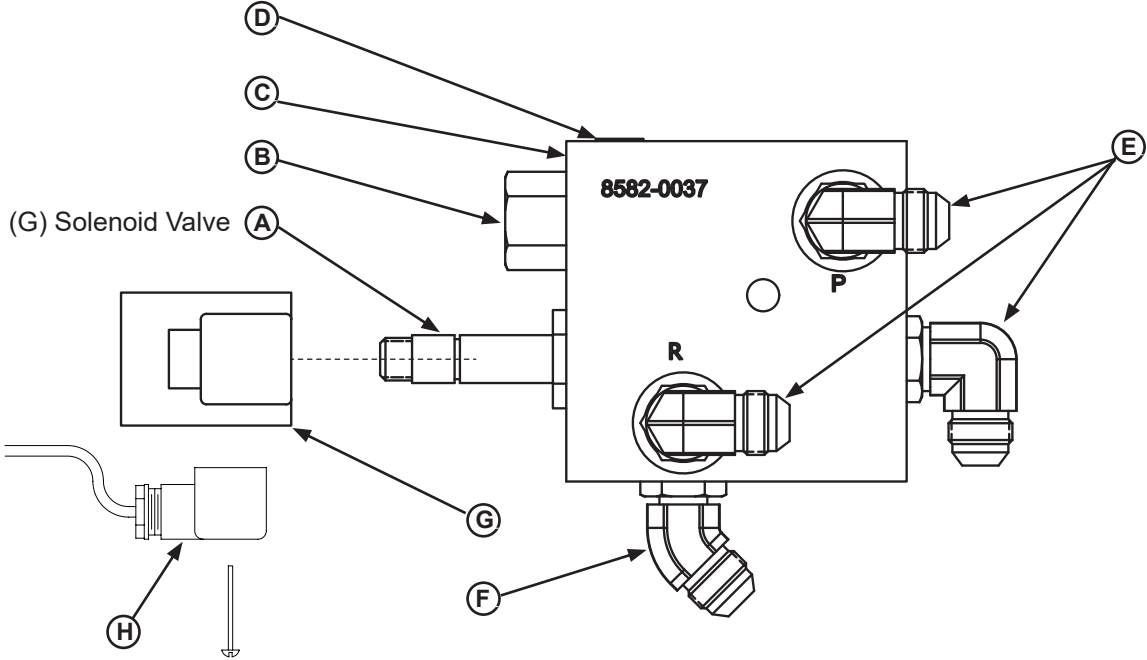
PARTS

Vertical Valve Block Assembly—Remote Mounted CentraPower



Item	Quantity	Part Number	Description
*	1	8585-0106	Vertical Valve Assembly, Remote Mounted CentraPower (Includes A-G and M-P)
A	1	8581-0005	Valve, Cartridge 3-Way Delta
B	1	8581-0183	Valve, Cartridge, Relief, Diff (Float Valve)
C	1	8581-0011	Valve, Cartridge 4-Way 2 Pos Delta
D	1	8581-0010	Valve, Cartridge 2-Way N.C. Poppet Delta
E	1	8581-0105	Valve, Cartridge Relief
F	2	9301-0111	Fitting, #6 ORB X #8 JIC
G	2	9301-0113	Fitting, 90 Deg #6 ORB X #6 JIC
H	3	8581-0004	Coil, 115V (Includes 1/2 UNF Jam Nut)
J	1	4301-0003	Cable Assy, 24" Lg, Two Coil
K	1	4305-0306	Cable Assy, 24" Lg, One Coil
M	1	8581-0139	Orifice Check (Lip Flow Control)
N	1	8581-0188	Valve, Cartridge, Check, Poppet
P	1	9301-0109	Fitting, #6 ORB - #6 JIC

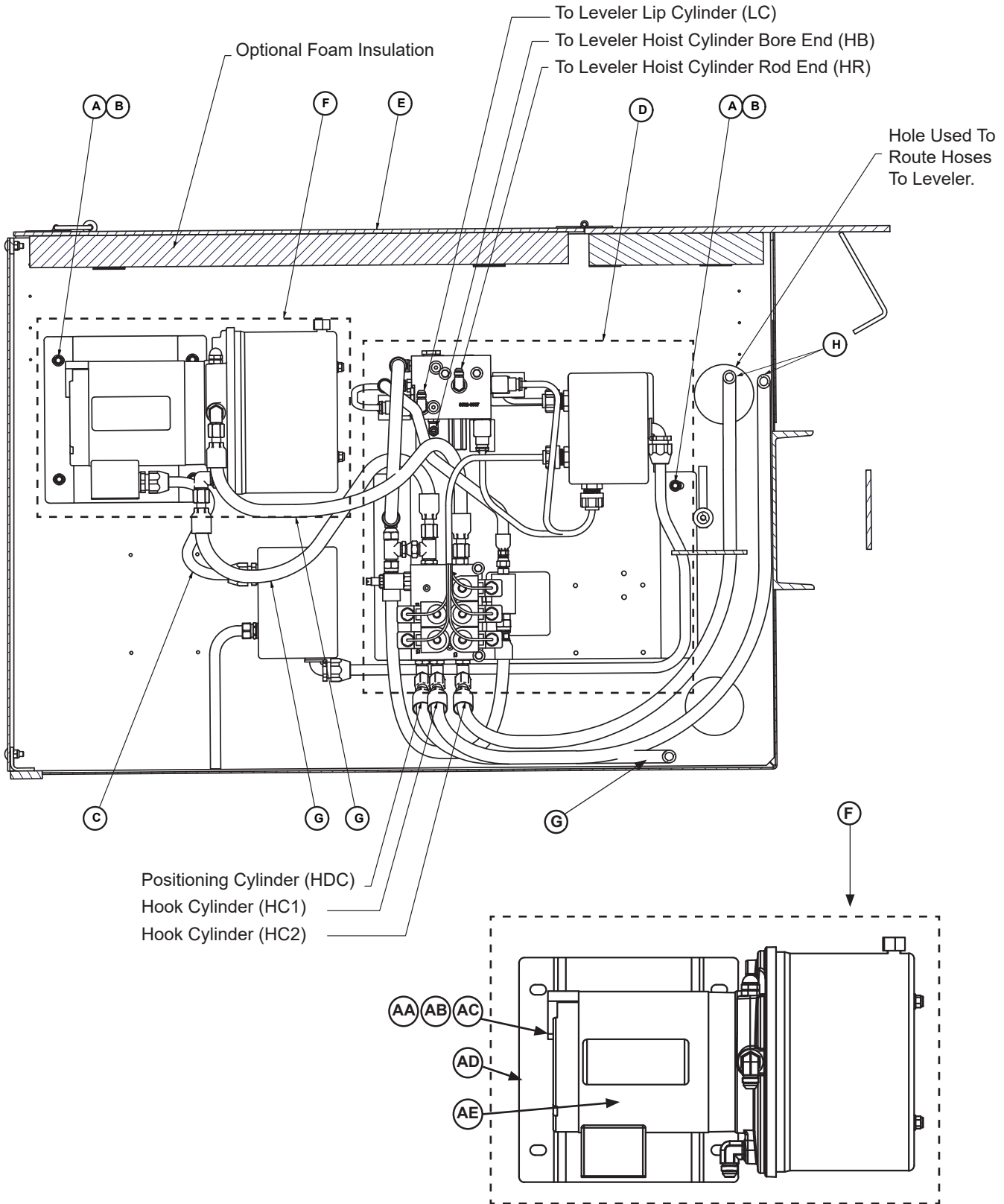
CentraPower—Valve Block Assembly



Item	Quantity	Part Number	Description
*	1	8583-0045	Valve Assembly, CentraPower, VS (Includes A-F)
A	1	8581-0005	Valve Cartridge 3-Way Delta
B	1	8581-0088	Valve Cartridge - Flow Ctrl 2 GPM
C	1	8582-0037	Valve Manifold, CentraPower
D	1	9301-0104	Plug, Hex, #4 ORB
E	3	9301-0116	Fitting, Elbow - 90 Deg, #8 ORB - #8 JIC
F	1	9301-0120	Fitting, Elbow - 45 Deg, #8 ORB - #8 JIC
G	1	8581-0004	Coil 115V, (Includes 1/2 UNF Jam Nut)
H	1	4301-0004	Cable Assy, 48" Lg (Includes Screw)

PARTS

VS/KS4—Pan Mounted Manifold/ PPAC Assy—Hydraulic Components

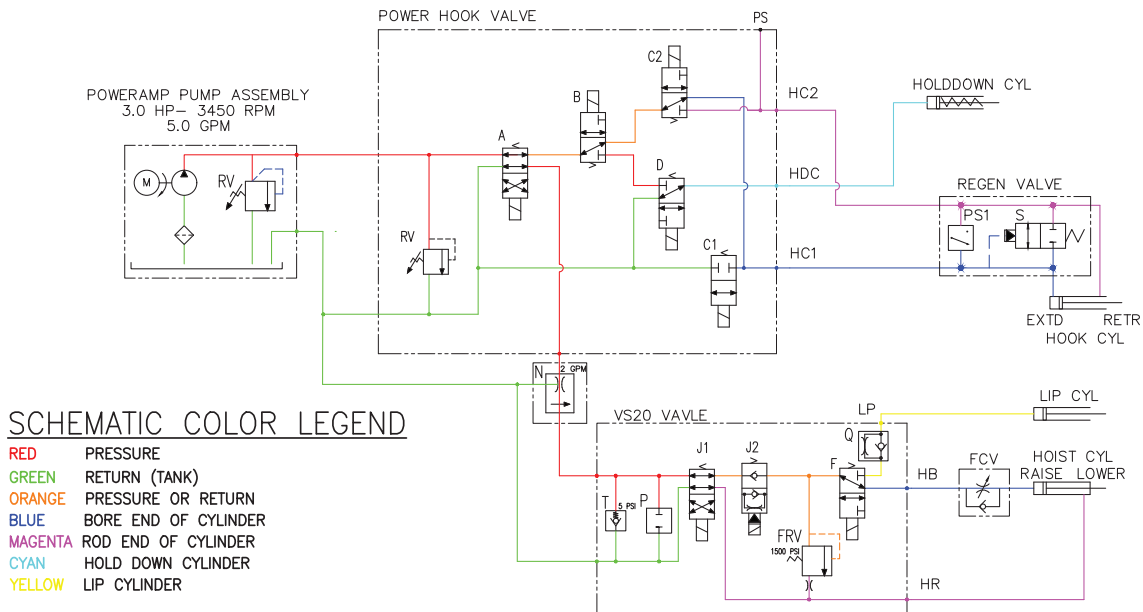


*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

VS/KS4—Pan Mounted Manifold/ PPAC Assy—Hydraulic Components

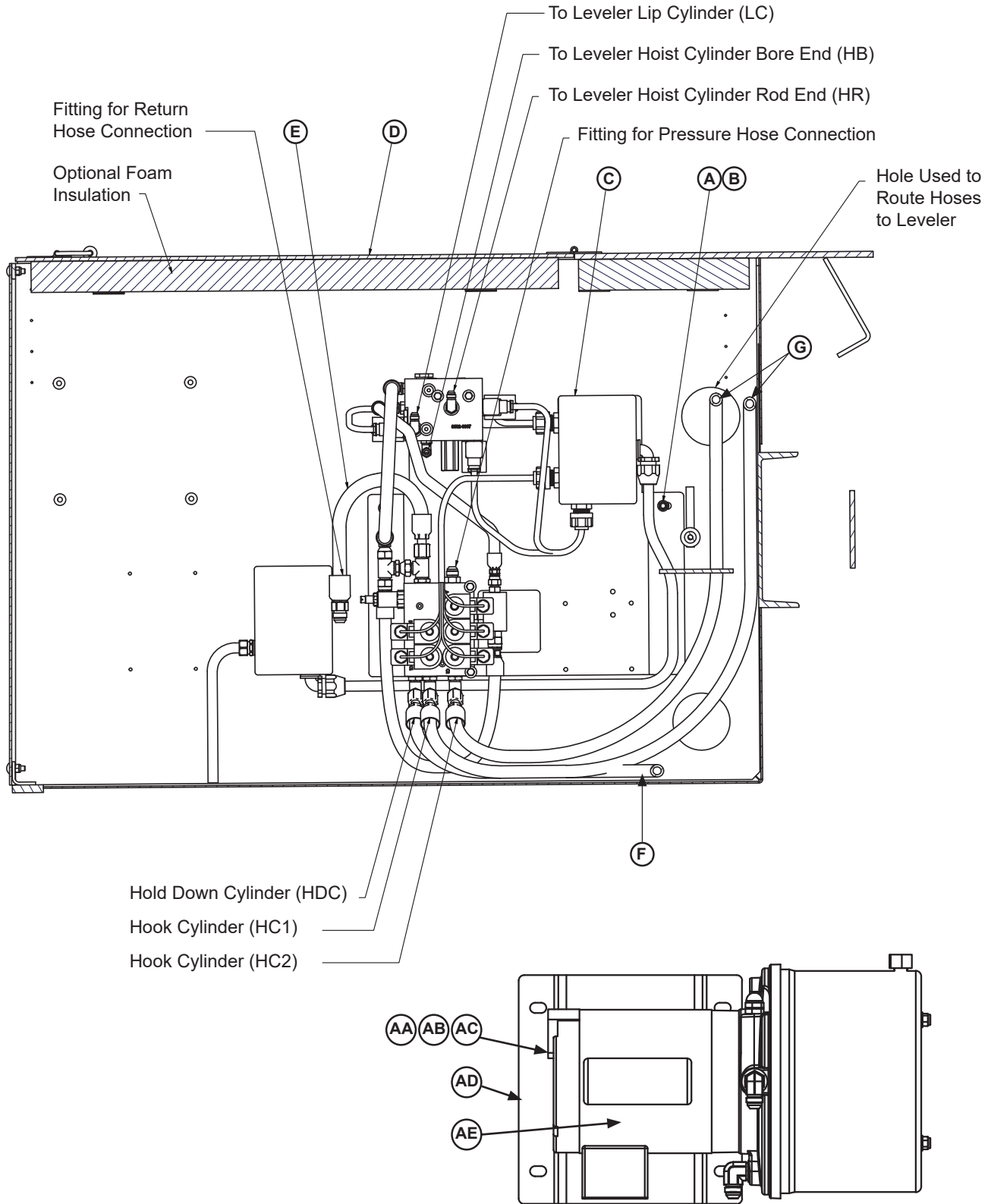
Item	Quantity	Part Number	Description
*	1	0035-0046	Final ASSY, KS4 Pan, VS20
A	6	2101-0039	Nut, Nylon Lock, 5/16-18 UNC
B	6	2101-0163	Washer Flat, 5/16 DIA
C	1	4305-0047	Conduit Assy, 17" OAL, 4, STR-STR, 1-14G,3-14BK
		4305-0046	Conduit Assy, 17" OAL, 3, STR-STR, 1-12G,1-12BK, 1-12W
		4305-0161	Conduit Assy, 17" OAL, 3, STR-STR, 1-12G,2-12BK
D	1	8586-0020	VS/KS4, Valve MTG Assy, (See Page 62)
E	1	9225-____	Pan, KS4, (Consult Factory*)
F	1	9396-0027	Remote PowerPac Assy (See Table Below)
G	3	9904-0078	HYD Hose, 1/2", 35.00 LG
H	2	9904-0089	HYD Hose, 1/2", 60.00 LG

Item	Quantity	Part Number	Description
*	1	9396-0027	Remote PowerPac ASSY, VS KS4, 2.1 GAL, 4 GPM, 3 HP
AA	4	2101-0039	Nut, Nylon Lock, 5/16-18 UNC
AB	4	2101-0163	Washer Flat, 5/16 DIA
AC	4	2101-0187	Screw, HHCS - Grade 5, 5/16-18 UNC x 1
AD	1	9391-0084	Remote PPAC Mount
AE	1	9395-0155	PPAC,VSKS4,1PH,115/230V 4 GPM,2.1 GAL COOKPOT
	1	9395-0156	PPAC,VSKS4,1PH,115/230V,WD 4 GPM,2.1 GAL COOKPOT
	1	9395-0157	PPAC,VSKS4,1PH,208V 4 GPM,2.1 GAL COOKPOT
	1	9395-0158	PPAC,VSKS4,1PH,208V,WASHDOWN 4 GPM,2.1 GAL COOKPOT
	1	9395-0169	PPAC,VSKS4,3PH,460V 4 GPM,2.1 GAL COOKPOT
	1	9395-0160	PPAC,VSKS4,3PH,460V,WASHDOWN 4 GPM,2.1 GAL COOKPOT
	1	9395-0161	PPAC,VSKS4,3PH,575V 4 GPM,2.1 GAL COOKPOT
	1	9395-0162	PPAC,VSKS4,3PH,575V,WASHDOWN 4 GPM,2.1 GAL COOKPOT



PARTS

VS/KS4—Remote Mounted PPAC—Hydraulic Components

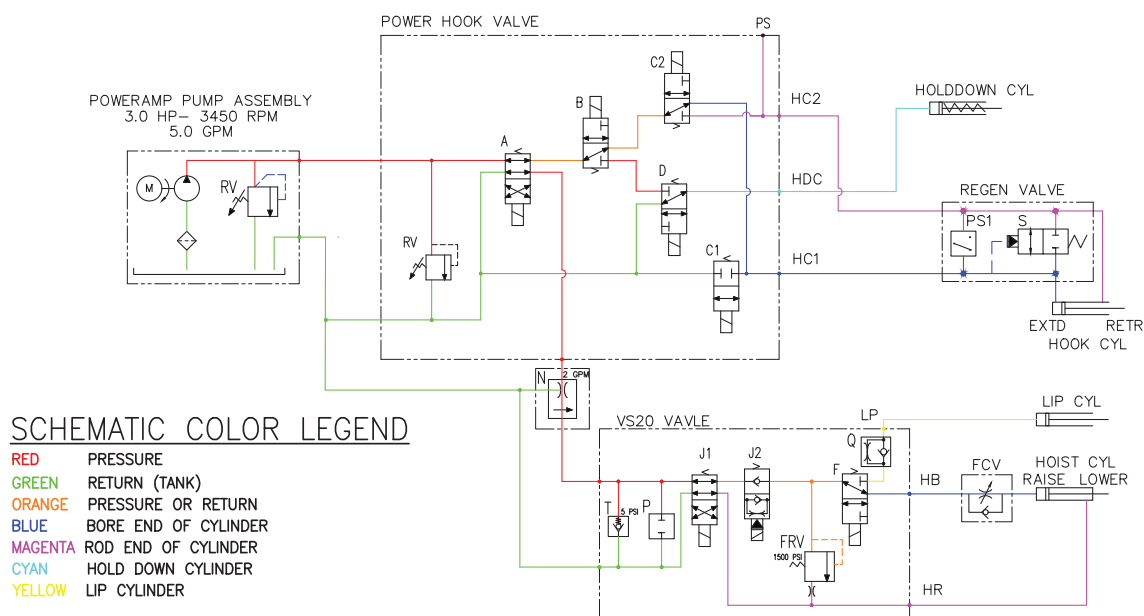


*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

VS/KS4—Remote Mounted PPAC—Hydraulic Components

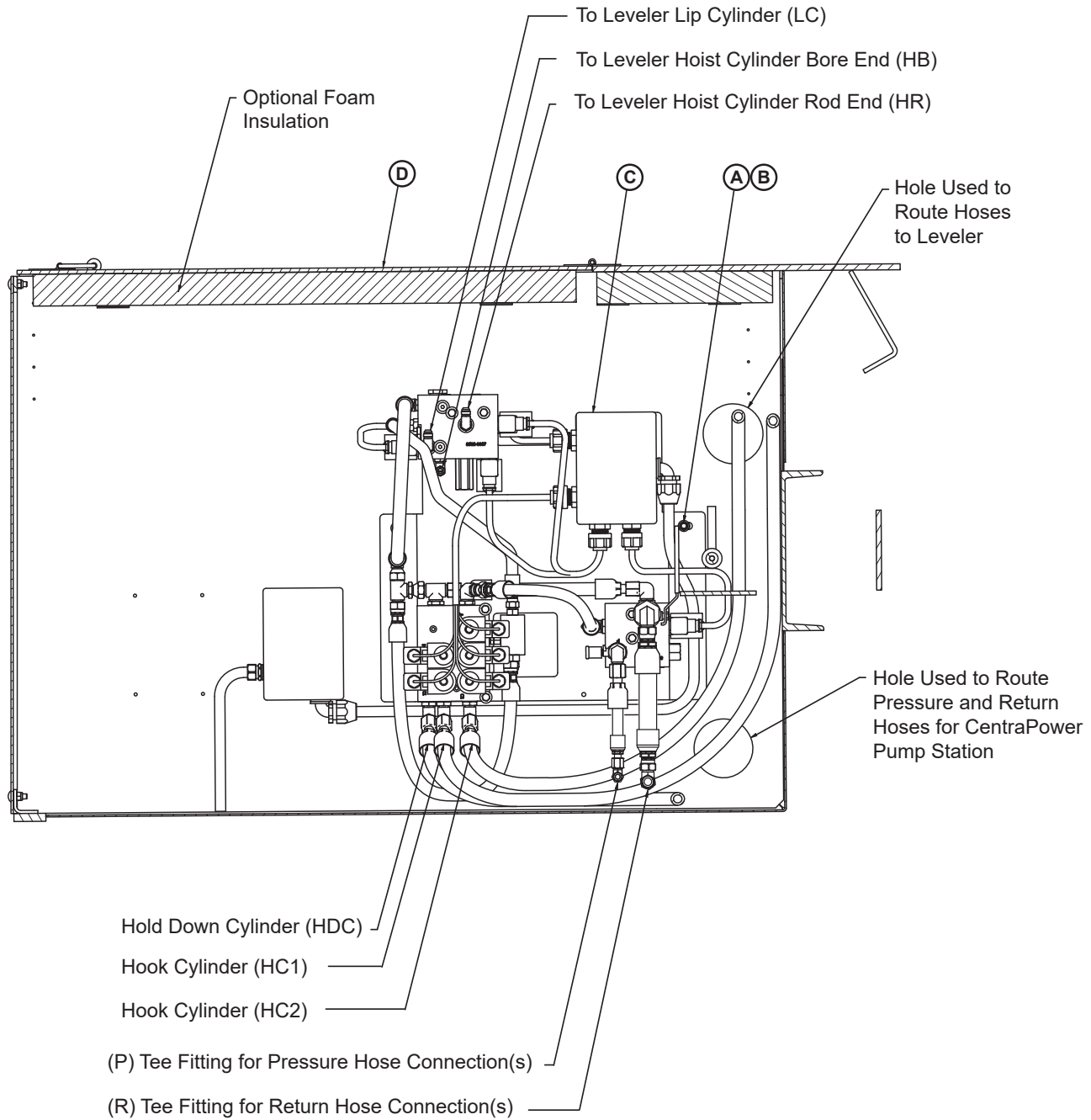
Item	Quantity	Part Number	Description
*	1	0035-0048	Final ASSY, KS4 Pan, Remote PPAC VS20
A	2	2101-0039	Nut, Nylon Lock, 5/16-18 UNC
B	2	2101-0163	Washer, Flat, 5/16 DIA
C	1	8586-0020	Valve MTG Assy, RV Float, VSKS4 (See Page 62)
D	1	9225-_____	Pan, KS4 (Consult Factory*)
E	1	9904-0046	Hyd Hose Assy - 1/2" x 30.00
F	1	9904-0078	Hyd Hose, 1/2", 35.00 LG
G	2	9904-0089	Hyd Hose, 1/2", 60.00 LG

Item	Quantity	Part Number	Description
*	1	9396-0027	Remote PowerPac ASSY, VS KS4, 2.1 GAL, 4 GPM, 3 HP
AA	4	2101-0039	Nylon Lock Nut, 5/16-18 UNC
AB	4	2101-0163	Washer Flat, 5/16 DIA
AC	4	2101-0187	Screw, HHCS - Grade 5, 5/16-18 UNC x 1
AD	1	9391-0084	Remote PPAC Mount
AE	1	9395-0155	PPAC,VSKS4,1PH,115/230V 4 GPM,2.1 Gal Cookpot
	1	9395-0156	PPAC,VSKS4,1PH,115/230V,WD 4 GPM,2.1 Gal Cookpot
	1	9395-0157	PPAC,VSKS4,1PH,208V 4 GPM,2.1 Gal Cookpot
	1	9395-0158	PPAC,VSKS4,1PH,208V,Washdown 4 GPM,2.1 Gal Cookpot
	1	9395-0169	PPAC,VSKS4,3PH,460V 4 GPM,2.1 Gal Cookpot
	1	9395-0160	PPAC,VSKS4,3PH,460V,Washdown 4 GPM,2.1 Gal Cookpot
	1	9395-0161	PPAC,VSKS4,3PH,575V 4 GPM,2.1 Gal Cookpot
	1	9395-0162	PPAC,VSKS4,3PH,575V,Washdown 4 GPM,2.1 Gal Cookpot



PARTS

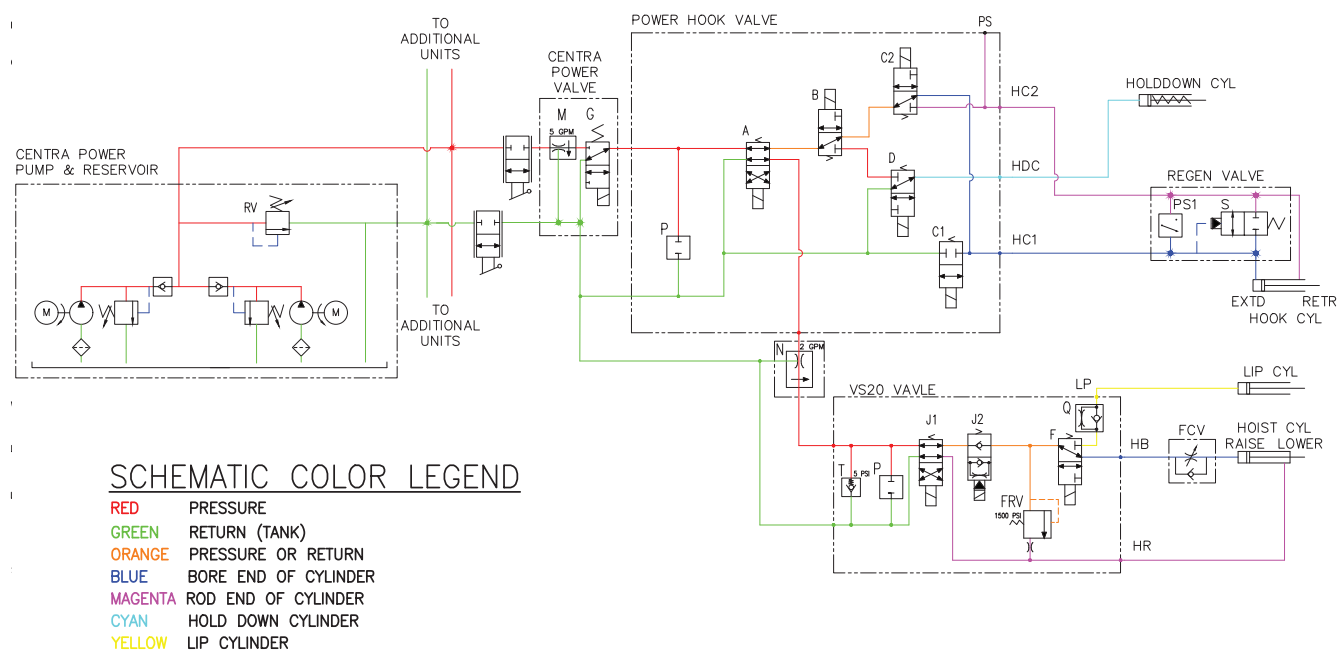
VS/KS4—CentraPower—Hydraulic Components



*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders.
Contact Technical Services for 2002 and earlier parts.

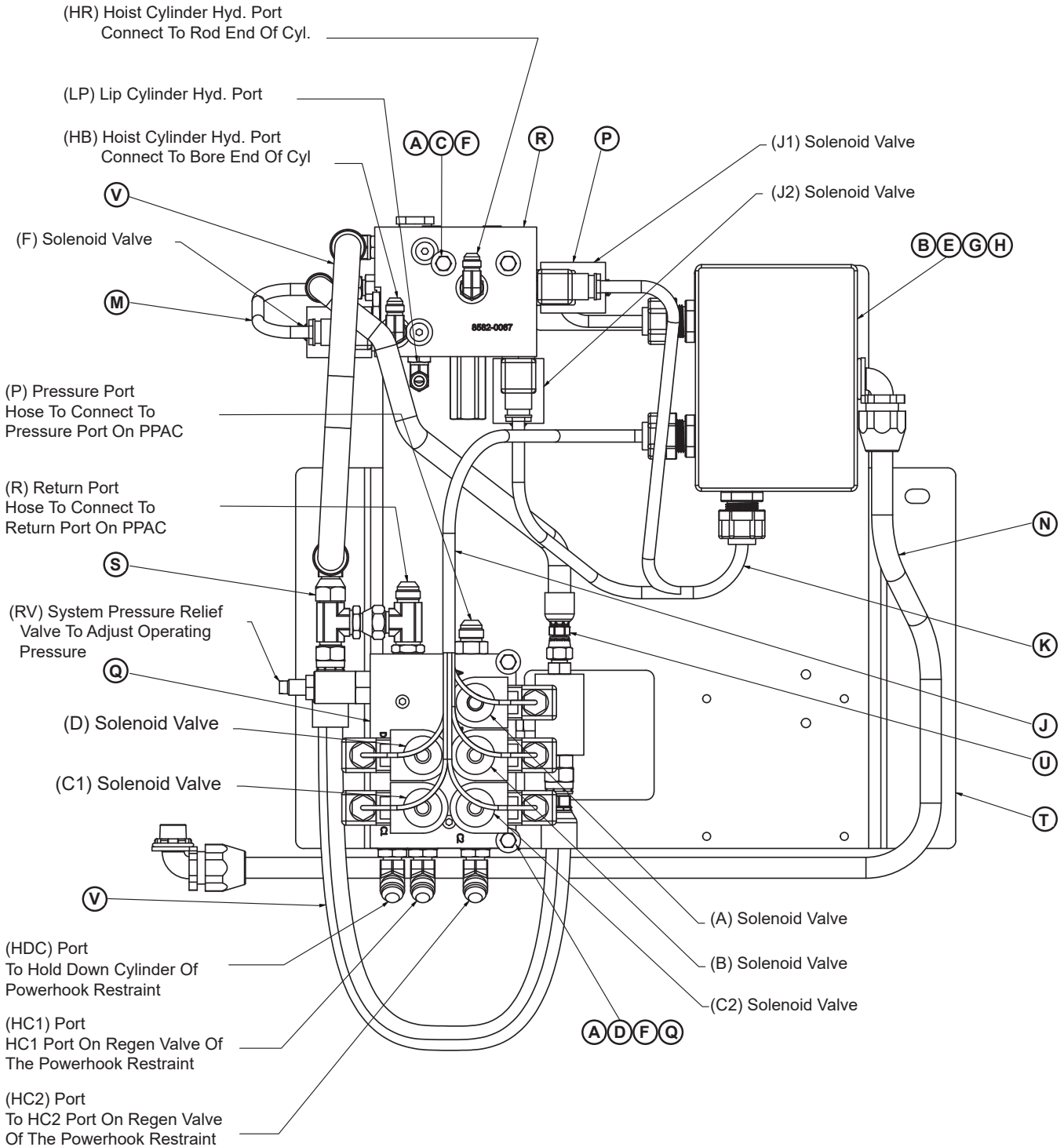
VS/KS4—CentraPower—Hydraulic Components

Item	Quantity	Part Number	Description
*	1	0035-0047	Final Assy, KS4 Pan, CentraPower, VS20
A	2	2101-0039	Nut, Nylon Lock, 5/16-18 UNC
B	2	2101-0163	Washer Flat, 5/16 DIA
C	1	8586-0021	Valve MTG Assy, RV Float, CentraPower, VSKS4 (Page 62)
D	1	9225-_____	Pan, KS4 (Consult Factory*)



PARTS

VS/KS4—Pan Mounted Manifold/ PPAC—Hydraulic Components



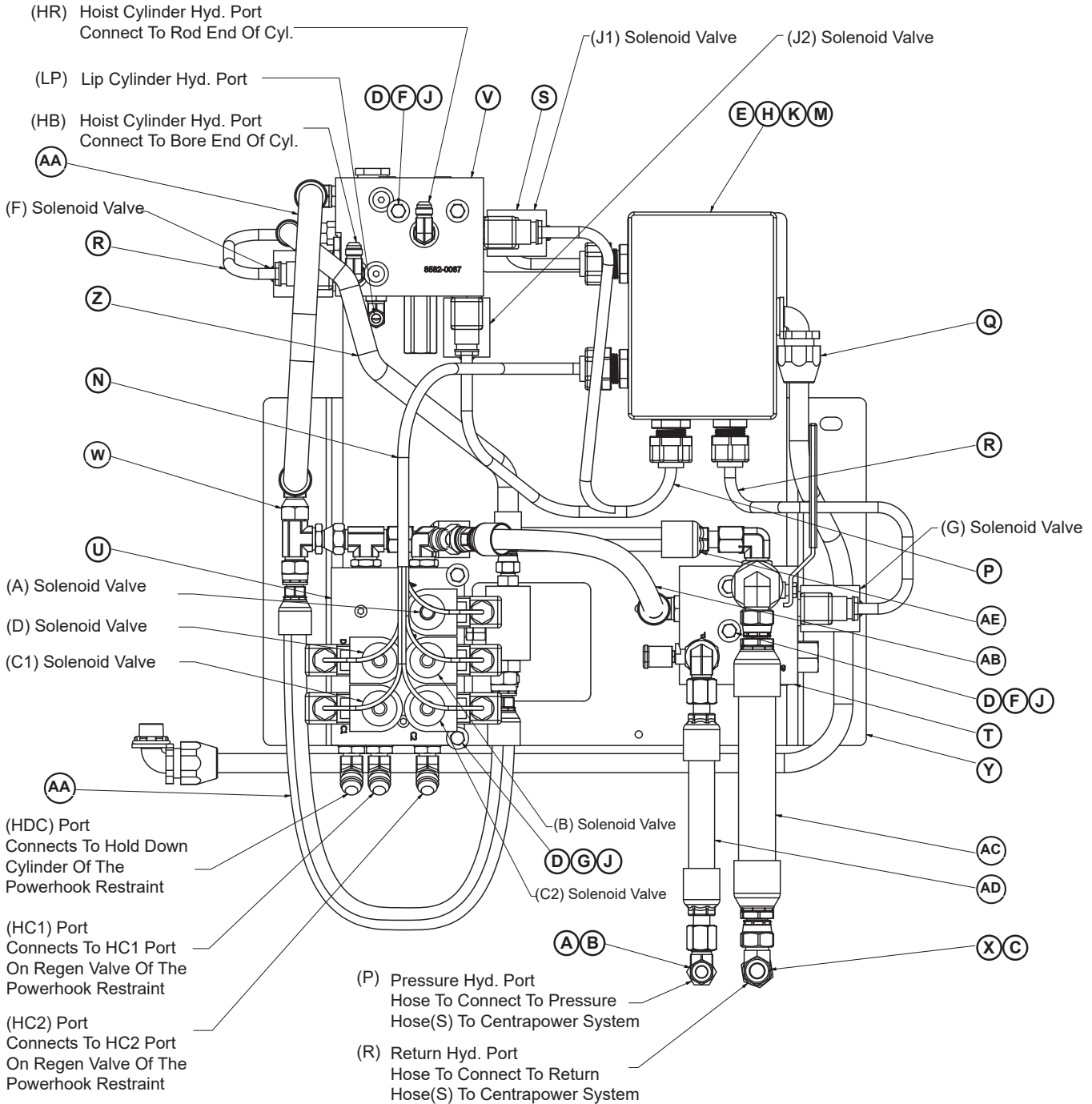
VS/KS4—Pan Mounted Manifold/ PPAC—Hydraulic Components

Item	Quantity	Part Number	Description
*	1	8586-0020	Valve MTG Assy, RV Float, VSKS4, Remote PPAC
A	4	2101-0059	Washer, Flat, 1/4" DIA
B	4	2101-0166	Hex Nut, #6-32 UNC
C	2	2101-0116	Screw, HHCS, 1/4-20 UNC X 2-3/4
D	2	2101-0142	Screw, HHCS, Grade 2, 1/4-20 UNC X 5
E	4	2101-0156	Washer, Lock #8 Regular Split
F	4	2101-0213	Nut, Whiz, 1/4-20NC ZP 1/4-20 UNC
G	4	2101-0271	Screw, RHMS - Slotted 6-32 UNC X 1
H	1	2751-0080	J-Box - Fiberglass 5 X 7 X 3
J	1	4305-0234	Cable Assy, 27"OAL, 5 Coil Canfield Connectors
K	1	4305-0264	Cable Assy, 24"OAL, 2 Coil Canfield Connectors
M	1	4305-0306	Cable Assy, 24"OAL, 1 Coil Canfield Connectors
N	1	4305-0633	Conduit Aassy, 40"OAL,8,90-90 6-16R,1-14W.1-14G
P	8	8581-0004	Coil 115V, (Includes 1/2 UNF Jam Nut)
Q	1	8585-0086	Valve Assy, Powerhook, KS4 (See PowerHook Manual)
R	1	8585-0105	Valve Assy, VSKS4, RV Float
S	1	9301-0145	Fitting Elbow - 90 Deg, #8 JICF Swivel X #8 JIC
T	1	9391-0101	Plate,Formed,VSKS4 Valves, KS4 Pan Mount
U	1	9904-0079	Hyd Hose Assy, 1/4"X 28.00 #6 JICF Swivel 90 X #6 JICF Swivel
V	2	9904-0082	Hyd Hose, 3/8", 21.00 LG #8 JICF Swivel Both Ends

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders.
Contact Technical Services for 2002 and earlier parts.

PARTS

VS/KS4—Pan Mounted Manifold/ PPAC—Hydraulic Components



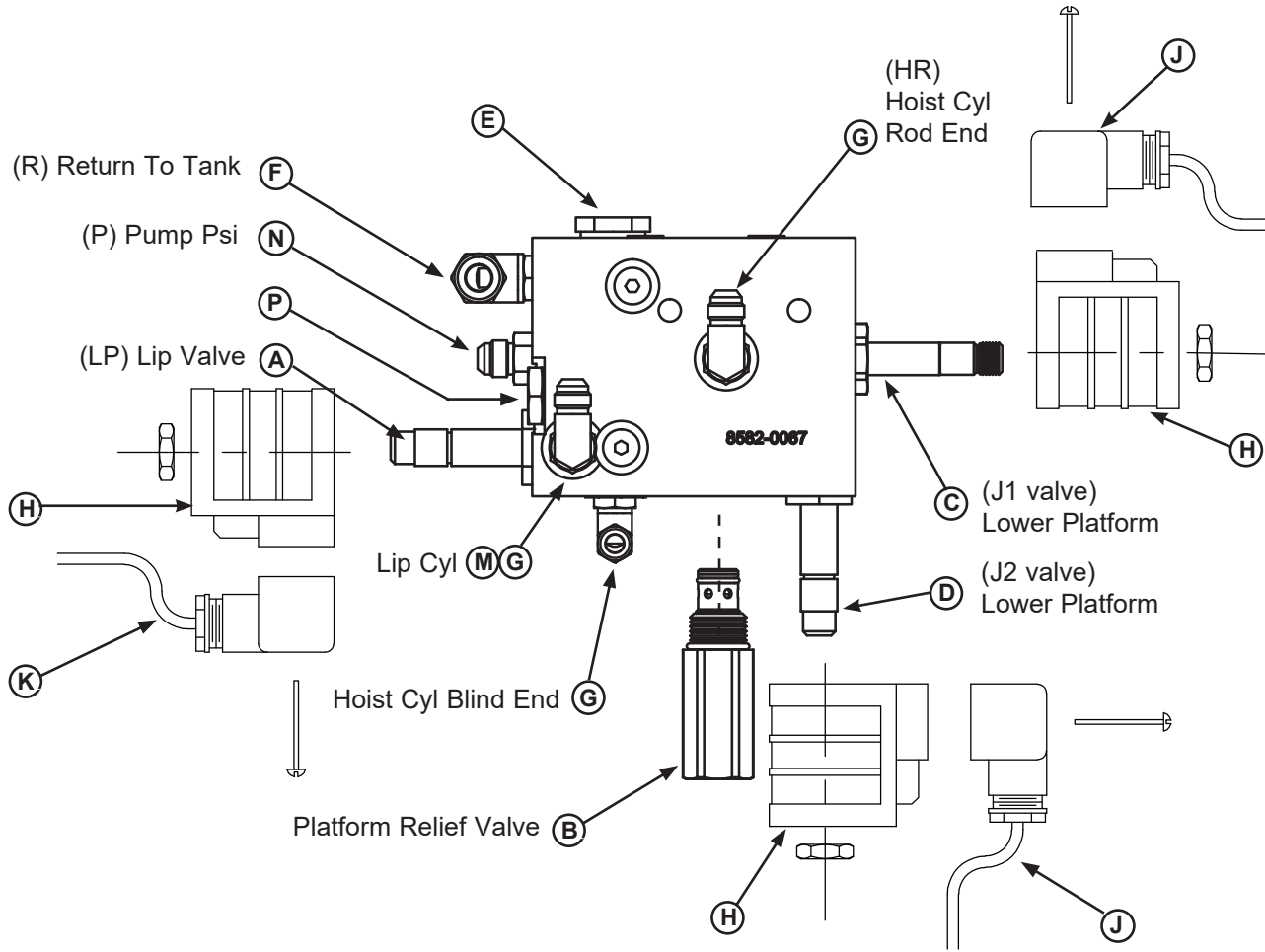
VS/KS4—Pan Mounted Manifold/ PPAC—Hydraulic Components

Item	Quantity	Part Number	Description
*	1	8586-0021	Valve Mtg Assy, RV Float, VSKS4, CentraPower
A	1	0521-0021	Fitting, Cap, #8 JICF
B	1	0521-0077	Fitting, Tee, Union, #6 JICM
C	1	0521-0106	Fitting, Cap, #10 JICF
D	6	2101-0059	Washer, Flat, 1/4" DIA
E	4	2101-0166	Hex Nut, #6-32 UNC
F	4	2101-0116	Screw, HHCS, 1/4-20 UNC X 2-3/4
G	2	2101-0142	Screw, HHCS - Grade 2 - Zinc Plated 1/4-20 UNC X 5
H	4	2101-0156	Washer, Lock, #8
J	6	2101-0213	Nut, Whiz, 1/4-20NC ZP 1/4-20 UNC
K	4	2101-0271	Screw, RHMS, - Slotted 6-32 UNC X 1
M	1	2751-0080	J-Box, Fiberglass 5 X 7 X 3
N	1	4305-0234	Cable Assy,27"Oal,5 Coil Canfield Connectors
P	1	4305-0264	Cable Assy,24"OAL,2 Coil Canfield Connectors
Q	2	4305-0306	Cable Assy,24"OAL,1 Coil Canfield Connectors
R	1	4305-0634	Conduit Assy,40"OAL,9,90-90 7-16R,1-14W.1-14G
S	9	8581-0004	Coil,115VAC,DHC-11 Delta #39670035,Nut #36202020
T	1	8583-0077	Valve Assy, CP KS4 - W/ 5 GPM Flow Limiter
U	1	8585-0092	Valve Assy, PowerHook KS4 (See PowerHook Manual)
V	1	8585-0105	Valve Assy, VSKS4, RV Float
W	1	9301-0145	Fitting, Elbow, 90 Deg, #8 JICF Swivel X #8 JIC
X		9301-0157	Fitting, Tee, Union #10 JICM, SAE
Y	1	9391-0101	Plate, Formed, VSKS4 Valve, KS4, Pan Mount
Z	1	9904-0079	Hyd Hose Assy - 1/4" X 28.00 #6 JICF Swivel 90 X #6 JICF Swivel
AA	2	9904-0082	Hyd Hose,3/8", 21.00 LG #8 JICF Swivel Both Ends
AB	1	9904-0090	Hyd Hose,3/8", 17.50 LG #8 JICF Swivel Both Ends
AC	1	9904-0111	Hyd Hose,3/4", 20.00 LG #10 JICF Swivels, Screw Caps
AD	1	9904-0110	Hyd Hose,1/2", 20.00 LG #8 JICF Swivel Both Ends
AE	1	9904-0289	Hyd Hose,1/2", 12.00 LG #8 JICF Swivel Both Ends

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders.
Contact Technical Services for 2002 and earlier parts.


PARTS

Vertical Valve Block Assembly—Remote Mounted CentraPower



Item	Quantity	Part Number	Description
*	1	8585-0105	Vertical Valve Assembly, Remote Mounted CentraPower (Includes A-G and M-N)
A	1	8581-0005	Valve, Cartridge 3-Way Delta
B	1	8581-0183	Valve, Cart, Relief, DIFF.
C	1	8581-0011	Valve, Cartridge 4-Way 2 Pos Delta
D	1	8581-0010	Valve, Cartridge 2-Way N.C. Poppet Delta
E	1	8581-0106	Cavity Plug, Delta
F	1	9301-0115	Fitting, Elbow - 90 DEG , #6 ORB - #8 JIC
G	3	9301-0113	Fitting, Elbow 90 Deg #6 ORB X #6 JIC
H	3	8581-0004	Coil 115V (Includes 1/2 UNF Jam Nut)
J	1	4301-0003	Cable Assy, 24" Lg, Two Coil
K	1	4305-0306	Cable Assy, 24" Lg, One Coil
M	1	8581-0139	Orifice Check (Lip Flow Control)
N	1	9301-0109	Fitting CON STR THRD #6 ORB - #6 JIC
P	1	8581-0188	Valve, Cartridge, Check, Poppet

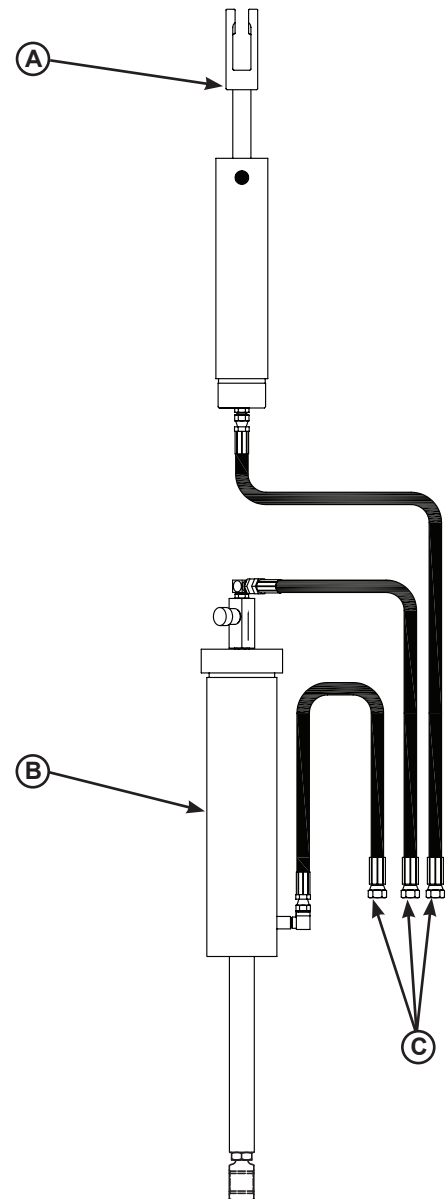
CentraPower VS-KS4 - Platform Hydraulic Components


DANGER

If the hydraulic system is opened to atmosphere anywhere other than the fluid reservoir, air will enter into the hydraulic system. Whenever this happens, air must be fully purged from the hydraulic system. See pages 18-19 for instructions.

NOTICE

See page 27 for hydraulic fluid checking/filling instructions.



Item	Quantity	Part Number	Description
A	1	0526-0016	Lip Cylinder, VS (w/fittings)
B	1	0525-0132*	Hoist Cylinder, Complete Assy (8' Platforms w/10" or 12" Pit)*
		0525-0133*	Hoist Cylinder, Complete Assy (8' Platforms w/15" Pit)*
		0525-0134*	Hoist Cylinder, Complete Assy (5' & 6' Platforms)*
C ¹	1	9904-_____ ¹	Hyd Hose
	1	9904-_____ ¹	Hyd Hose
	1	9904-_____ ¹	Hyd Hose

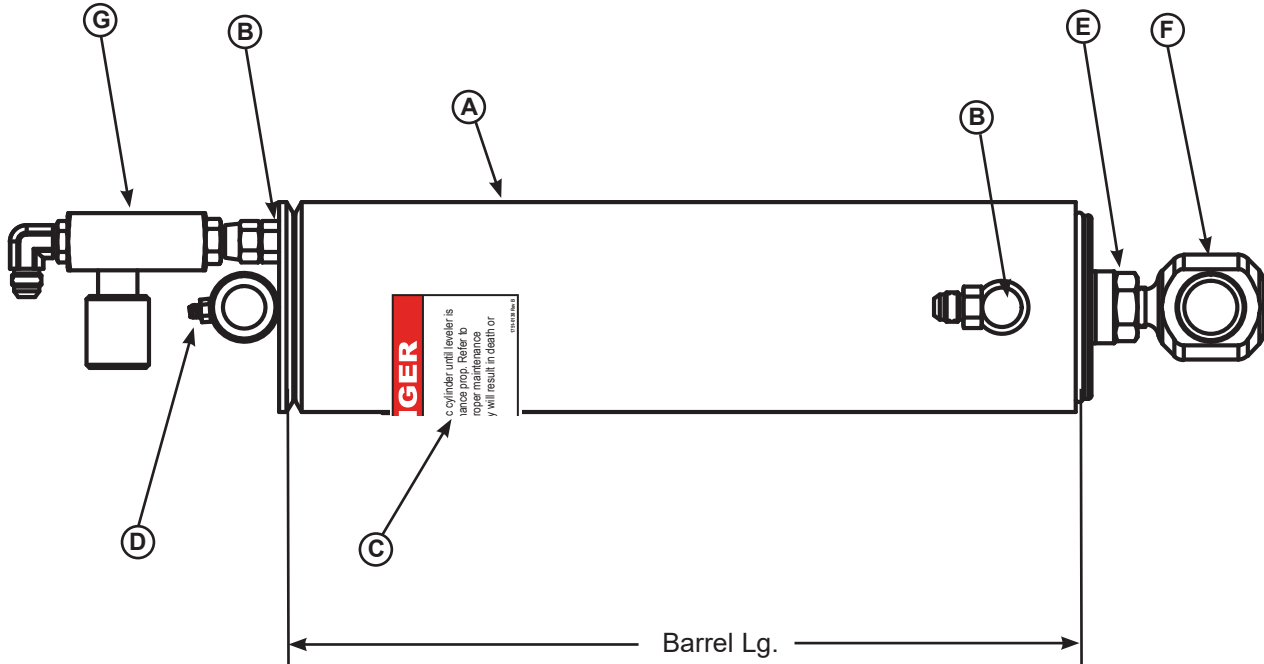
*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

Hoist Cylinder Parts

NOTICE

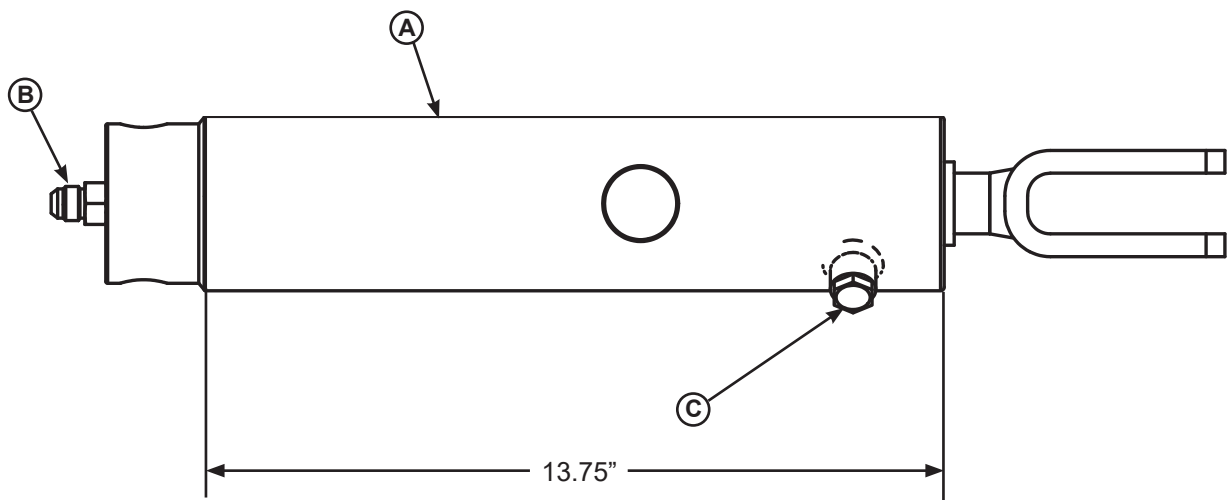
Seal kits are not available for vertical hoist cylinders.



Item	Quantity	Part Number	Description
A	1	0525-0132*	Hoist Cylinder, Complete Assy (8' Platforms w/12" Pit)*
		0525-0133*	Hoist Cylinder, Complete Assy (8' Platforms w/15" Pit)*
		0525-0134*	Hoist Cylinder, Complete Assy (5' & 6' Platforms)*
B	2	9301-0109	Fitting, #6 ORBM x #6 JICM
C	1	1751-0138	Decal, Cylinder Fluid
D	1	0521-0073	Grease Zerk, 3/16" Straight
E	1	2101-0159	Nut, Hex, 3/4-16 UNF
F	1	0523-0028	Yoke
G	1	9303-0025	Valve Assy, Down Speed Flow Control

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

Lip Cylinder Parts

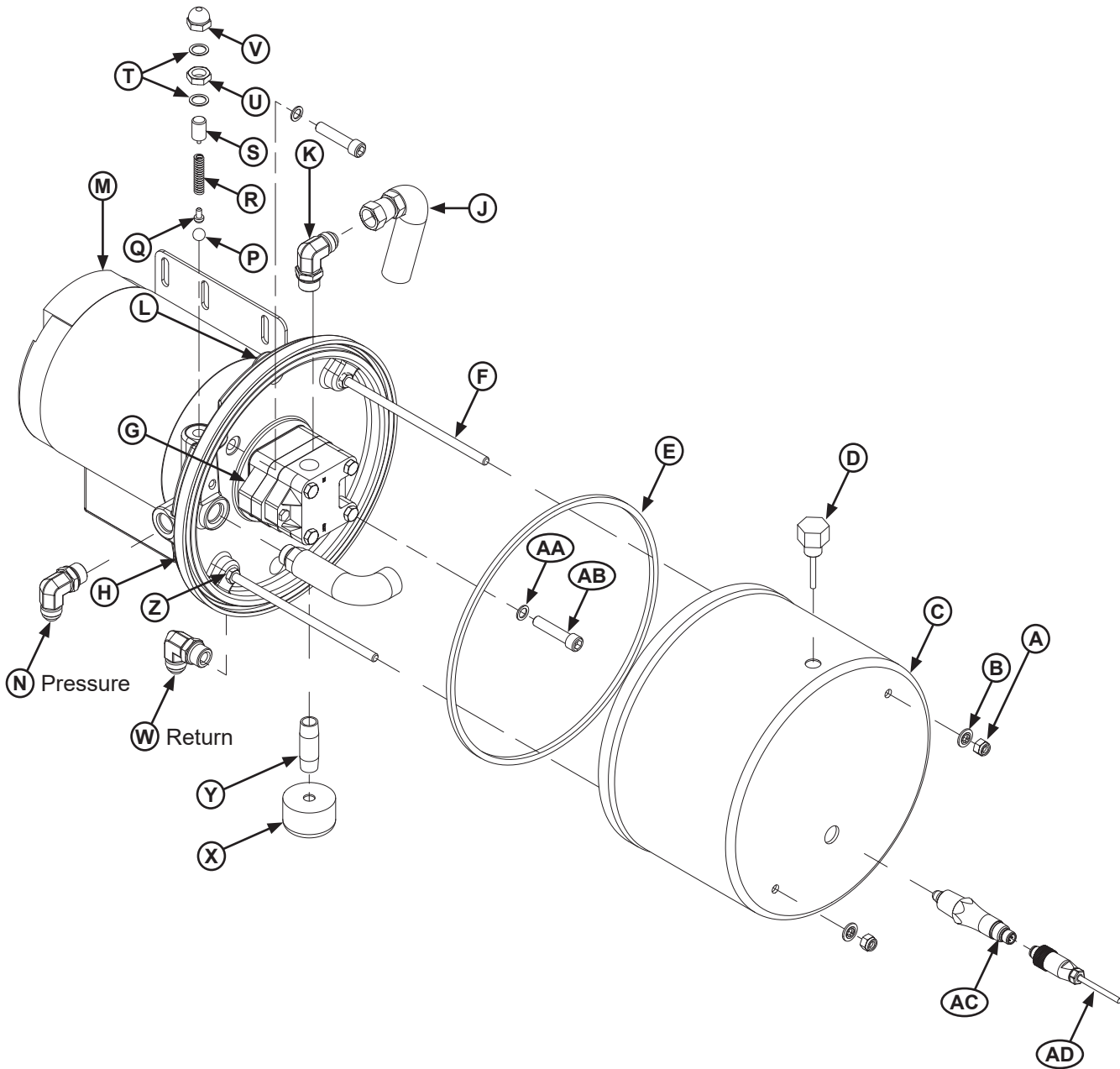


Item	Quantity	Part Number	Description
A	1	0526-0016	Lip Cylinder, VS (w/fittings C-D)
B	1	9301-0109	Fitting, #6 ORB x #6 JIC
C	1	0521-0028	Fitting, Breather-Brass
D	1	0521-0241	Seal Kit, Lip Cyl (Not Shown)

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders.
Contact Technical Services for 2002 and earlier parts.

PARTS

Remote Mount Powerpack Assembly



NOTICE
Leveler pressure is set by relief valve on valve block.
Remote mount powerpack pressure is factory set.

Typical cookpot-style remote mount Powerpack shown for reference purposes only.
Contact Systems, LLC Technical Services with serial number for exact breakdown.

Technical Service at 800-643-5424 or techservices@loadingdocksystems.com

Remote Mount Powerpack Assembly (continued)

Item	Quantity	Part Number	Description
	1	9395-____ ¹	Powerpack, Complete (Includes All Items Except L, N, and W)
A	2	2101-0039	Nut, Nylon Lock, 5/16-18 UNC
B	2	9301-0029	Seal, Thread
C	1	9302-0014	Reservoir
D	1	9301-0199	Breather Cap, 3/8 NPT Male
E	1	9301-0027	O-Ring (Reservoir)
F	2	9302-0012	Tie Rod (Reservoir)
G	1	9301-____ ¹	Pump (Only)
	4	2101-0016	Screw, HHCS, 5/16-18 UNC x 3-1/2 in., Grade 5
	1	9301-0028	Gasket, Pump
	1	9303-0002	Coupling Assembly
H	1	9302-____ ¹	Plate, Drive
J	1	9904-0071	Hyd Hose, 1/2"x 17", #8 ORB x #8 JICF Swivel
K	1	9301-0116	Fitting Elbow, 90° #8-ORB x #8-JIC
L	1	9301-0106	Plug, #8-ORB
M	1	3411-____ ²	Motor Only
N	1	9301-0116	Fitting Elbow, 90° #8-ORB x #8-JIC
P	1	0521-0014	Ball, Check
Q	1	9301-0024	Guide, Check Ball
R	1	9302-0009	Spring, Relief Valve
S	1	9303-0003	Screw, Adjusting
T	2	9301-0014	Washer, Nylon, 11/16 in. OD x 1/2 in. ID
U	1	9301-0015	Nut, Jam, 1/2-20 UNF
V	1	9301-0016	Nut, Acorn, 1/2-20 UNF
W	1	9301-0175	Fitting Elbow, 90° #8-ORB x #10-JIC
X	1	9301-0009	Strainer, Suction
Y	1	9301-0008	Pipe Nipple, 3/8 NPT x 3 in.
Z	2	2101-0063	Nut, Jam 5/16-18 UNC
AA	2	9301-0003	Washer, Aluminum, 9/16 in. OD x 3/8 in. ID x 1/16 in.
AB	2	9301-0004	Screw, SHCS, 3/8-16 UNC x 1-3/4 in.
AC	1	0961-0642	Sensor, Fluid, Cookpot (Optional)
AD	1	0961-0648	Cable, 5M Lg, M12 Plug (Optional)

¹ Provide dock leveler serial number and type of installation when e-mailing, calling or faxing orders.

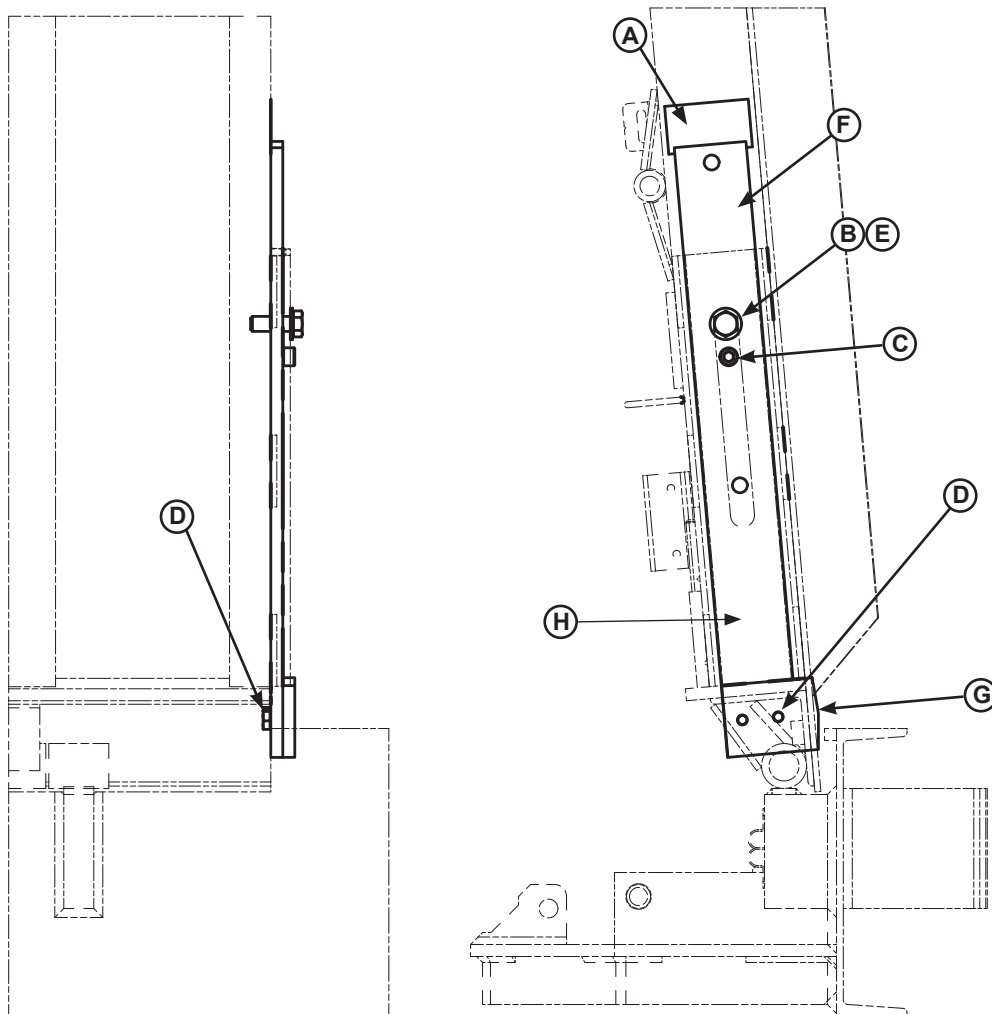
² Provide dock leveler serial number, voltage, and phase when e-mailing, calling or faxing orders.

PARTS

Item	Quantity	Part Number	Description
	1	9516-0041	Kit, Replacement Maintenance Prop. Includes (A-G)
A	1		Decal, VS M.P. Position Notice
B	1		Washer, Flat, 5/8" Dia
C	1		Screw, SHCS, 1/2-13 UNC X 1/2
D	2		Screw, HHCS, Grade 5, 1/2-13 UNC X 1.00
E	1		Screw, HHCS, Grade 8 - 5/8-11 UNC X 1.75
F	1		VS Maintenance Prop
G	1		VS Maintenance Prop Adaptor
H	1	9511-0050	VS Maintenance Prop Housing

⚠ WARNING

In the event the maintenance prop requires replacement, also inspect the maintenance prop housing before replacing the maintenance prop. Contact Technical Services with any questions.



Customer Information

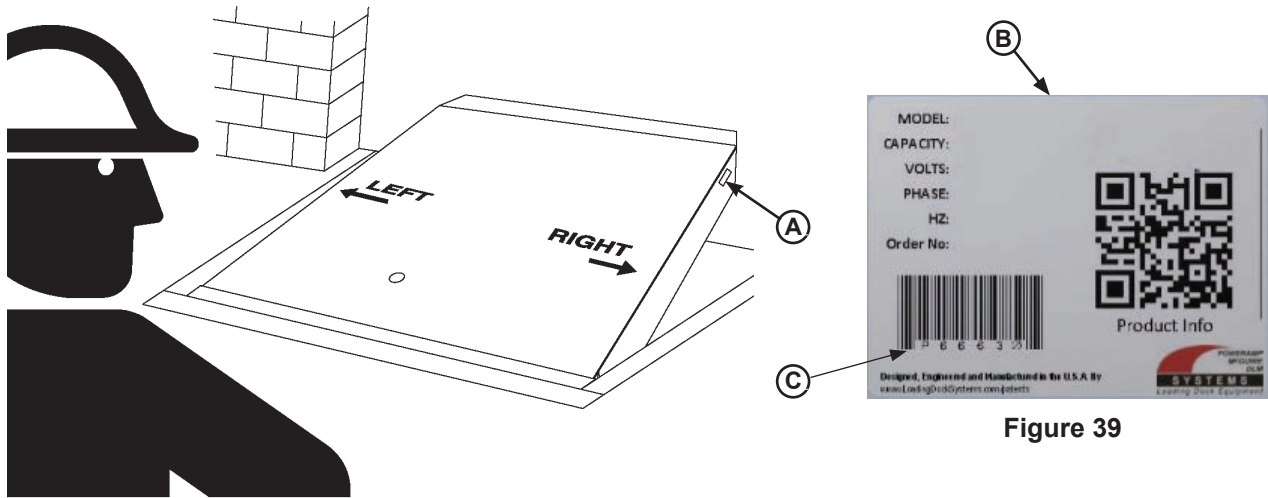


Figure 38

Figure 39

NOTE: Refer to Figure 38 for left/right orientation of dock leveler and Figure 39 for example of decal.

The LEVELER model/serial number decal is located on the left platform joist near the front (lip) of dock leveler (A).

When you receive your new equipment, write down the model and serial number (C) in the form provided. This will help ensure safe keeping of the numbers in the event the model/serial number decal (A, B) becomes lost or damaged.

Also, write down Systems, LLC's order number, the company that installed the dock leveler, and the original owner's name. This will all help to identify the specific dock leveler if more information is required.

When ordering, use part numbers and description to help identify the item ordered. Do not use "item" numbers. These are only for locating the position of the parts. Always give dock leveler MODEL NUMBER and/or SERIAL NUMBER.

For service, call or contact:

Systems, LLC
P.O. Box 309
Germantown, WI 53022

Phone: (800) 643-5424
Fax: (262) 255-5917

www.loadingdocksystems.com

<u>Dock Leveler Information</u>	
Model	_____
Serial No.	_____
Systems, LLC, Job No.	_____
<u>Vehicle Restraint Information</u>	
Model	_____
Serial No.	_____
Systems, LLC Order No.	_____
<u>Original Owner Information</u>	
Name	_____
Address	_____

<u>Installer Information</u>	
Name	_____
Address	_____

Date of Installation	_____

STANDARD PRODUCT WARRANTY

SYSTEMS, LLC warrants that its products will be free from defects in design, materials and workmanship for a period of one (1) year from the date of shipment. All claims for breach of this warranty must be made within 30 days after the defect is or can with reasonable care, be detected. In no event shall any claim be made more than 30 days after this warranty has expired. In order to be entitled to the benefits of this warranty, the product must have been properly installed, maintained and operated in accordance with all manufacturer's recommendations and/or specified design parameters and not otherwise have been subject to abuse, misuse, misapplication, acts of nature, overloading, unauthorized repair or modification, application in a corrosive environment or lack of maintenance. Periodic lubrication, adjustment and inspection in accordance with all manufacturers' recommendations are the sole responsibility of the Owner/User.

In the event of a defect, as determined by SYSTEMS LLC, covered by this warranty, SYSTEMS LLC shall remedy such defect by repairing or replacing any defective equipment or parts, bearing the cost for the parts, labor and transportation. This shall be exclusive remedy for all claims whether based on contract, negligence or strict liability.

WARRANTY LIMITATIONS

THE ABOVE WARRANTIES ARE IN LIEU OF ANY OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SYSTEMS LLC AND ITS SUBSIDIARIES SHALL NOT IN ANY EVENT BE LIABLE TO ANYONE, INCLUDING THIRD PARTIES, FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND INCLUDING BUT NOT LIMITED TO, BREACH OF WARRANTY, LOSS OF USE, LOSS OF PROFIT, INTERRUPTION OF BUSINESS OR LOSS OF GOODWILL.

PRODUCT SPECIFIC WARRANTY "VSH" SERIES LEVELER

In addition to the "Standard Product Warranty" provided with all McGuire® products, Systems LLC, guarantees materials, components and workmanship to be free of defects for the following extended periods:

- Structural Warranty – For an additional period of four (4) years, for parts, labor and freight, this warranty specifically applies to; the deck section, lip section, frame, rear hinge assembly and front hinge assembly only.
- Hydraulic Warranty – For an additional period of four (4) years, for parts, labor and freight, this warranty specifically applies to; the hydraulic pump and motor, all hydraulic cylinders, hydraulic pressure lines and fittings only.